JULY, 1952

Telephone Engineer and Management

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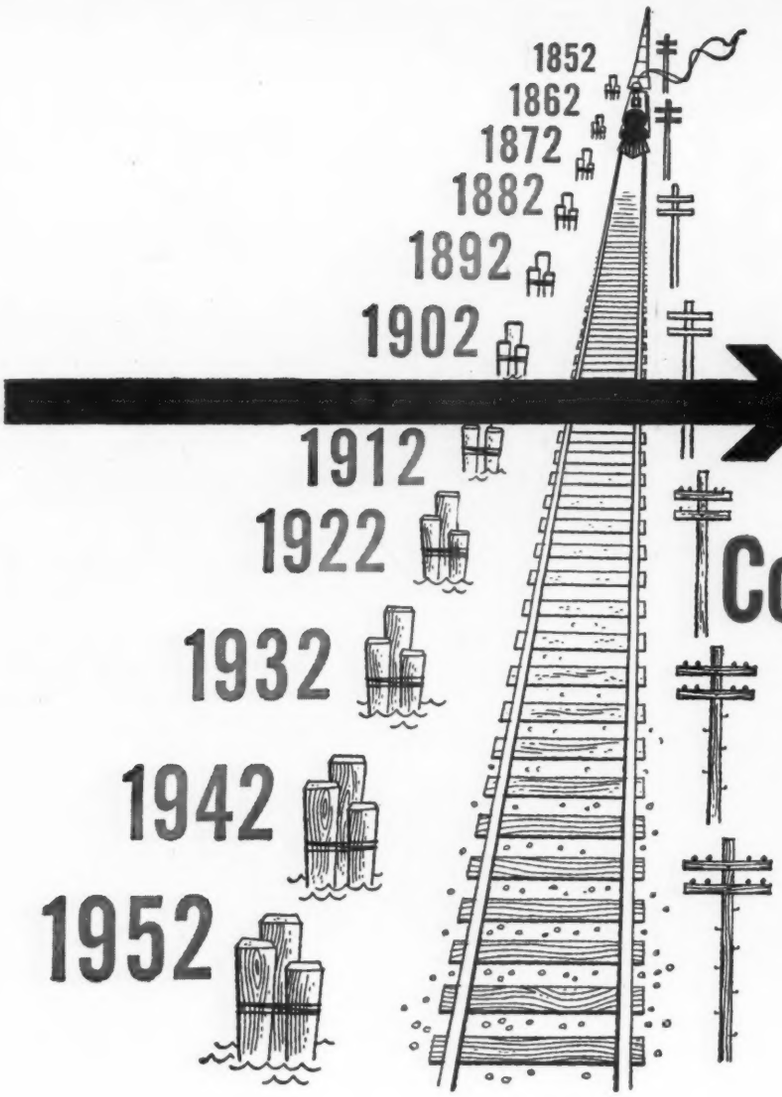
THE NATIONAL TELEPHONE MAGAZINE

Featuring In This Issue—

- Public Relations—You and Your Subscribers, by Robert Hansen
- Small Exchange Accounting, by LaMar S. Stoops
- Safety Hazards Cost You Money, by Dave Markstein
- Small Company Talk • Washington Reports • Industry News



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Across The Editor's Desk

The 50th Anniversary of the Alexandria (Minn.) Telephone Company was celebrated June 17 with an open house of the exchange and general offices. Dr. M. R. WRIGHT, well known nationally in telephone circles, the present president, officiated at ceremonies where minutes of early meetings were read and discussed. The original plan to have the system provide county-wide service is rapidly becoming a fact as predicted by the founders.

• • •

HUGH A. BARNHART, Rochester (Ind.) Telephone Co. and publisher of the Rochester News-Sentinel, has published a booklet "Anchors Aweigh" with a sub-title "A Reporter Sees the Navy in Action." Mr. Barnhart was invited to be present and participate in the Pacific Amphibious Maneuvers of the U. S. Navy with 22 other publishers. His story covered the period of Feb. 12-26, 1952. Hugh sent a copy to this writer who enjoyed his report very much. The booklet reporting his experiences and observations was printed and presented to the officers of the U. S. Navy.

• • •

And July 21 is the date set by Senator ANDREW J. SORDONI for the dial conversion at the Commonwealth Telephone Co.'s Dallas, Penna. new main office. We acknowledge Senator Sordoni's gracious invitation to attend the ceremonies. Cocktails and dinner with Sordoni as host will precede the ceremonies. A recent story in TIME on Governor Fine of Pennsylvania was most informative regarding the activities of Senator Sordoni in his home state of Pennsylvania.

• • •

Our good friend and writer of Small Company Talk that appears in each issue of our publications had a good excuse for being late with his manuscripts during June. We think W. F. (BILL) CORMAN has made a real name for himself as an author in the telephone industry. One June 19 past Bill forsook bachelorhood and writing for the more important chore of being married. His article in this issue was sent before the wedding.

The National Telephone Magazine

Telephone Engineer and Management

JULY, 1952 VOL. 56 NUMBER 7

Editor, RAY W. SMITH • *Advertising Director,* ROY F. SMITH
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FRONT COVER

Harlowe Miller, Dushore, Pa., awaits the signal giving her the opportunity of being the first to make a call over the new dial system of the Commonwealth Tel. Co.—*(Photo courtesy of Dushore (Pa.) Review.)*

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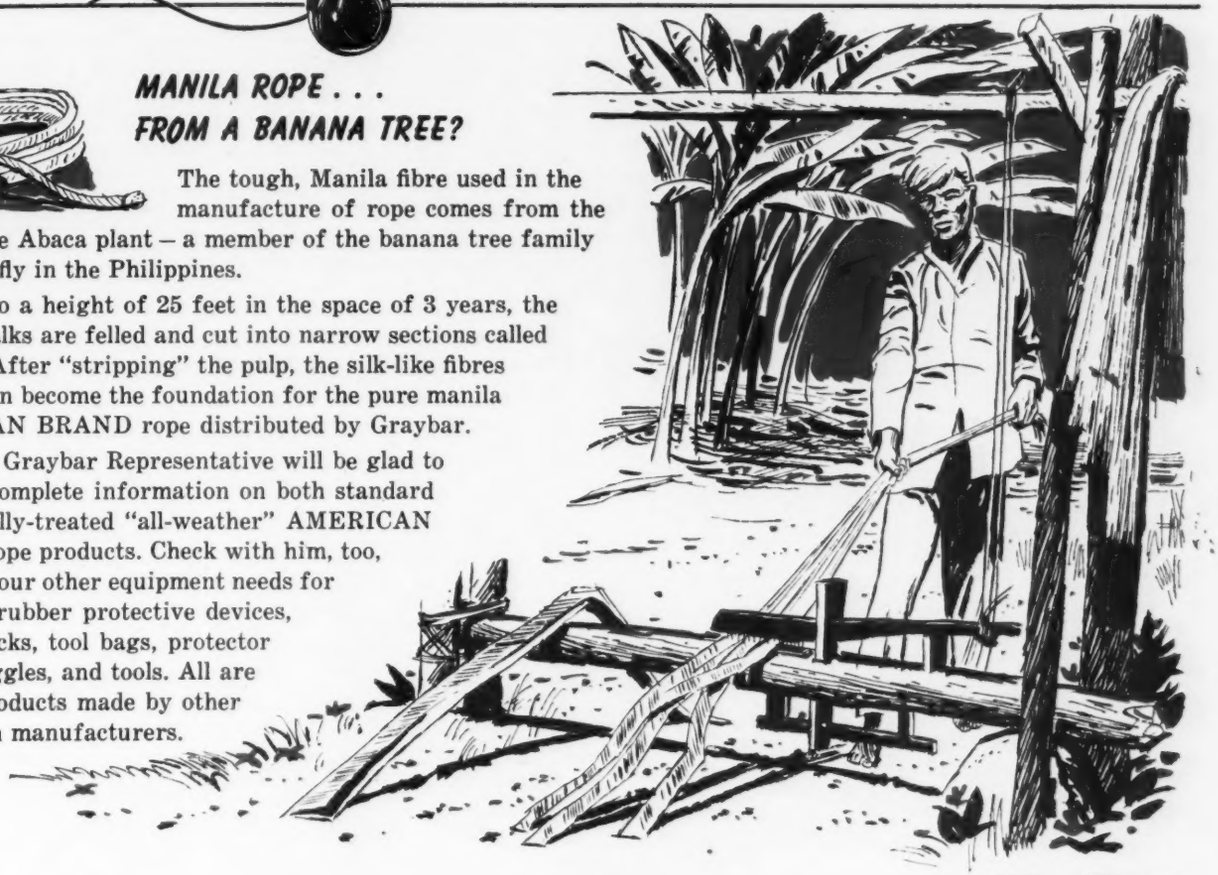
GraybaR TELEPHONE NEWS

MANILA ROPE . . . FROM A BANANA TREE?

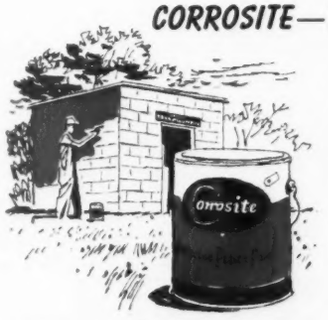
The tough, Manila fibre used in the manufacture of rope comes from the stalk of the Abaca plant – a member of the banana tree family found chiefly in the Philippines.

Growing to a height of 25 feet in the space of 3 years, the mature stalks are felled and cut into narrow sections called "tuxies". After "stripping" the pulp, the silk-like fibres that remain become the foundation for the pure manila AMERICAN BRAND rope distributed by Graybar.

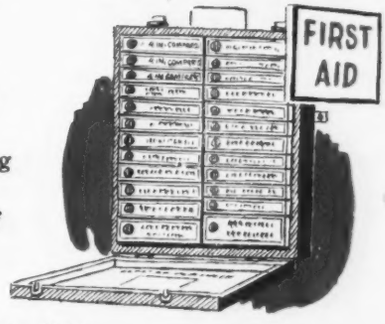
Your local Graybar Representative will be glad to give you complete information on both standard and specially-treated "all-weather" AMERICAN BRAND rope products. Check with him, too, for all of your other equipment needs for linemen – rubber protective devices, snatch blocks, tool bags, protector gloves, goggles, and tools. All are reliable products made by other well-known manufacturers.



CORROSITE—THE PROTECTIVE PLASTIC PAINT

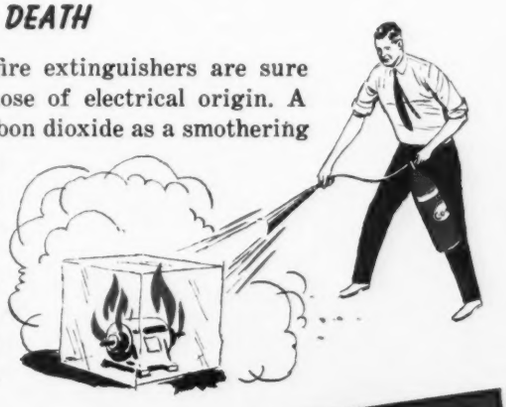


Properly applied, plastic-base Corrosite paint bonds permanently to metal or masonry . . . guards against corrosion and dampness . . . reduces painting maintenance. Try it yourself for protecting costly metal equipment or damp-proofing masonry walls of remote dial stations.



HOW TO FREEZE A FIRE TO DEATH

Handy, easy to use C-O-Two fire extinguishers are sure death on fires – particularly those of electrical origin. A squeeze of the handle shoots carbon dioxide as a smothering blanket of dry ice particles and gaseous CO_2—it snuffs out flames . . . sends temperatures below the burning point. C-O-Two fire extinguishers, as well as other types are conveniently available through any of Graybar's 108 offices and warehouses in the U.S.



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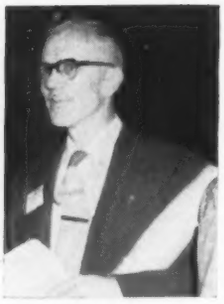
Robert P. Hansen —defines a term



LaMar S. Stoops —points up a problem.

In This Issue of Your TE&M

Bill Corman —asks a question.

Dave Markstein —introduces a character.

John S. Reed —explains ringing current.

ONCE IN A WHILE all the words, pictures and punctuation marks needed to build an issue of TE&M for you fall into the right places and our staff knows it has a "just right" issue. That's exactly what happened this month. Everything was just right—good writers—good subject matter—and even the temperature dropped from a blistering 98° to a nice work-inspiring 78°. . . . We hope you like this issue. This little front-of-the-book peek will let you know what's ahead.

SINCE THE job of Public Relations is a big one that needs a lot of getting after, we know you'll like the way ROBERT P. HANSEN, vice president of the Hansen Manufacturing Co., and director of the Princeton (Ind.) Tel. Co., discusses "Public Relations—You and Your Telephone Subscriber." If some of your subscribers think you're cramming big earnings down your sock and need a rate increase like an eskimo needs an icebox, Mr. Hansen's advice (starting on page 38) may help you shove your trouble right out of your life.

WE KNOW YOU have already read a-plenty about accounting, but our good friend, LaMar S. Stoops, general manager of the Nappanee (Ind.) Telephone Co., recently tackled a phase of the subject that's needed attention for some time—estimating the life expectancy of telephone plant. It's the $64 problem, but Mr. Stoops has come up with a formula that could easily be the $64 answer. You'll find it on page 42.

JUNE WAS A busy month for BILL CORMAN, our associate editor and manager of the Southland Telephone Co., Atmore, Ala. On June 19, Bill relinquished his status of bachelor. But, despite all the rushing around before the big day Bill did some wondering about "some rates subsidizing some other rates." His article starts on page 57.

The thing about Central Office Maintenance is that there better be plenty of it or service can go to pieces faster than today's dollar can get itself spent. JOHN S. REED of the Lincoln (Neb.) Tel. & Tel. Co., has more to say on the subject on page 53 of this issue. And, by the way—would you like to see Mr. Reed's Central Office series republished in book form?

IN THE JUNE TE&M DAVE MARKSTEIN came out with some good information on the how's and why's of "Good Press Relations". You readers seemed to like our new writer, so we've brought him back again with a zany little character he has created to prove that "it's better to be safe than sorry". Dave's article starts on page 46.

Of course there is plenty more good reading in this issue: "News Briefs" starting on page 18 is jam-packed with bits about what's going on; "Washington Bureau Reports," by Roland Davies and Fred Henck (see page 36) brings you the latest lowdown on what's happening in Washington that affects you. . . . Hope you like everything. . . . Let us know.

See you next month
YOUR *EDITORS*

Main telephone building Carlisle Exchange.

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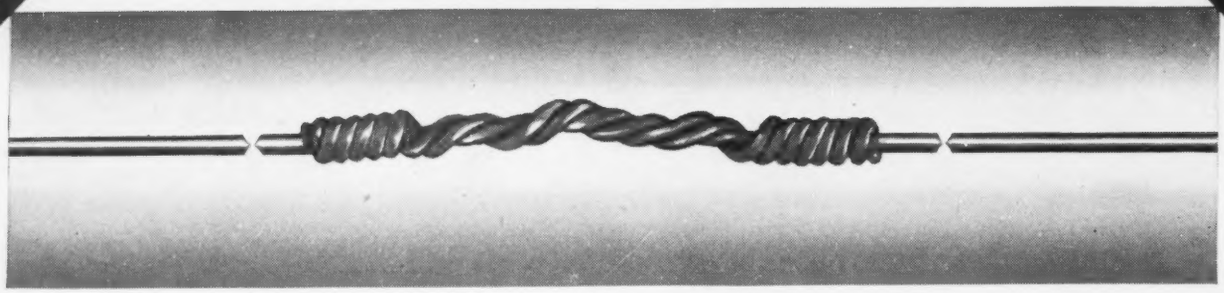
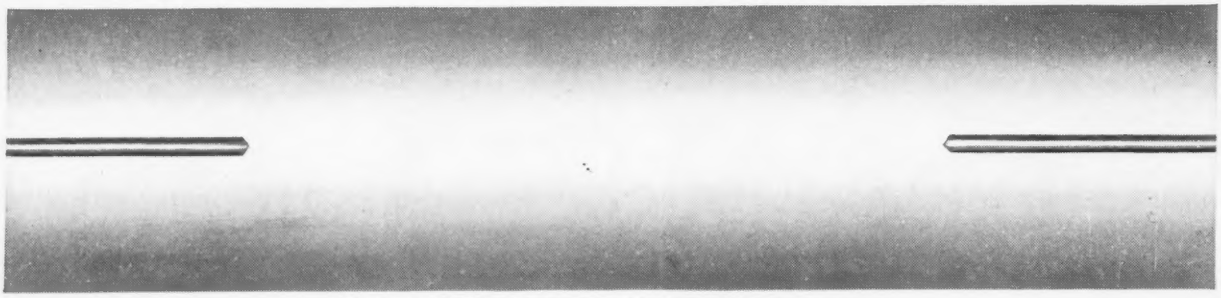


DEFECTIVE SPLICE



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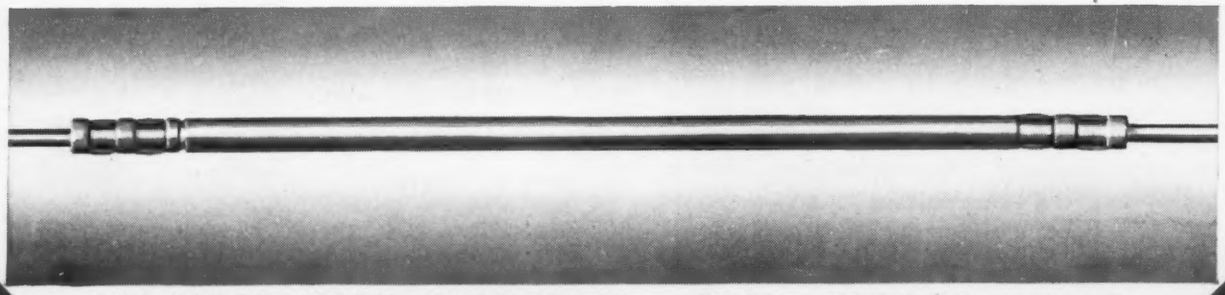

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Beware!

Not all dangers are caused by stumbling into a manhole, falling from a ladder or even tripping over Johnnie's skates.

Many dangers lurk for linemen, construction and maintenance men, installers and others on your company payroll.

These might not all be dangers to the men physically. More than likely the damage in most instances will be to the property of the telephone plant and especially so if these men have not kept up with modern methods, late and improved equipment and all the "know-how" described regularly in TELEPHONE ENGINEER and MANAGEMENT.

You do not have to be an engineer to understand the "how-to-do-it" articles appearing in TE&M. They are written in easy to understand terms, illustrated by pictures and drawings, and suitable to be filed away for reference.

In TE&M you have the ideas of such well known authorities as John S. Reed, Jay G. Mitchell, Richard Allen, Myrle Shafer, John G. Reynolds, A. W. Kimber, Bill Corman and others well known to the industry.

Many telephone companies subscribe to TE&M for each key man. Some of them see that every man on their payroll read TE&M regularly. Why don't you subscribe for yourself and your employees if you are not receiving TE&M on the 15th of every month. It costs only $3 per year.

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"They Were Good Stories"

To The Editors: Thank you very much for your interest in the article which we furnished to you recently concerning our conversion of the Henderson telephone exchange and the Vail Medal Award which was received by one of our employees.

Naturally we read your May issue with unusual interest and we sincerely appreciate your consideration of this company. Our very best wishes to you and your interesting and informative publication.

W. C. Darrow
General Commercial Mgr.,
Carolina Tel. & Tel. Co.
Tarboro, N. C.

"Glad To Help . . ."

To The Editors: Thanks very much for remembering to send me a copy of your December, 1950, issue of "Telephone Engineer", containing your excellent article on the advantages of telephone associations. As I mentioned to you recently, in Kansas City, this article will be most helpful to us in our interviews with the small Independent companies throughout our territory.

James Campbell
Southwestern Bell Tel. Co.,
St. Louis, Mo.

"25% Won't Be Enough"

To The Editors: I always read with interest your editorials and I am ashamed to say that I have never written to congratulate you on the excellence with which you point up the salient problems that confront the telephone industry.

Your most recent editorial in the June FORTNIGHTLY entitled "25% Won't Be Enough" is again a grand summary of the problems facing the telephone industry in their need for increased revenue. I should like to question your lead sentence and ask for some additional facts if you have them, regarding the statement that the cost of living has increased 86% during the past several years.

I realize that you have not specifically stated the base point for comparison and therefore I have no way of judging. If my figures are correct, the cost of living has increased approximately 36% from 1946 to date. The average consumer price index for the year 1946 is 139.3. Today it stands at 189.6. If you went back to 1941 the average consumer price index was at that time 105.2. Perhaps this is the year you used as the average increase from that point would figure out to be 78%. However, if you went back to 1939 the price index at that point was 99.4 which would give an increase of 91% to date.

I am just curious to know what your starting point was. It no way reflects on the good editorial which points out the wide gap between telephone income and the cost of living.

Fritz Haupt
Stromberg-Carlson Company
Rochester, New York

Thanks, Fritz, for your letter. Regarding the figures in which you are interested, the base year for living costs is supposed to be 1939, *but we will have to do a little explaining of the foregoing word "supposed".*

For a year or so we tried to keep up statistical data of our own on the increased cost of living as compared with the rise in telephone rates. We found it practically impossible to do this accurately on our own, because

My Neighbors

By Bill Paulson

"The 'welfare-staters' promise to take care of our old age but meanwhile they lap up taxes the way a cow eats salt."

it was impossible for us to obtain the records on every telephone rate increase. We found, however, that the Bell System companies were keeping very careful records of such increases, so we used their figures.

Each of the Bell System companies uses its own figures as to the increase in exchange rates in its own territory. However, they all use the same figure as to the increase of living costs, and those figures naturally change as time goes on.

For instance, the figures in the editorial you mention came from a presentation in the rate application of N. Y. Telephone Co., made some months ago. In this application the company said: ". . . compared to 1939 . . . consumer's prices, according to the U. S. Bureau of Labor Statistics, have risen 86%."

We notice that in a more recent case, that of New Jersey Bell, filed in April, 1952, the company says: "Even with the proposed new rate increase, telephone bills on the average would still be only 21% over prewar levels compared with 89% rise in the cost of living generally since the prewar era".

—THE EDITORS

"Tolls Carry The Load"

TO THE EDITORS: In reviewing your editorials "Tolls Carry the Load" and "25% Won't Be Enough" appearing in the FORTNIGHTLY TELEPHONE ENGINEER issues for April and June, 1952 respectively, it appears that you may have available certain data relative to the costs of handling toll service by the independent telephone companies. The April editorial compares total expenses per telephone with exchange revenues per telephone and states that the total expenses include toll expenses but that the toll expenses were not large compared to the whole. The editorial then concludes that tolls are carrying the load.

The June editorial states the tremendous increase in toll revenues is being used by regulatory commissions to hold down exchange rates and that toll revenues cannot be expected to subsidize increasing exchange expenses.

Starting on page 17 of the June issue of the FORTNIGHTLY TELEPHONE ENGINEER, there appears a summary of the report presented by Chairman Edwin M. Blakeslee of the USITA Toll Compensation Committee at the annual spring conference held in May of this year. Mr. Blakeslee's report indicates that the most recent revision in toll settlement arrangements between the Independents and the Bell System was made in 1946 and that toll cost data are to be accumulated by the Independent industry with the aid of Mr. L. T. Hayner for use in negotiations with the Bell System. He states, "We began to realize late in 1950, however, that further increases in wages and costs of handling the toll business necessitated a new look at the entire picture, and it was for this reason that we have renewed our negotiations" with the Bell System. Mr. Blakeslee's report further indicates that over half of the increases in toll compensations from the start of World War II was due to the increase in volume of toll business.

Any data which you may furnish us with respect to the costs of handling toll service by independent companies will be appreciated.

WILLIAM C. DUNLOP
CALIFORNIA PUBLIC UTILITIES COMMISSION
SAN FRANCISCO, CALIFORNIA

The statements in our editorial were based on the calculations that the cost of handling tolls, exclusive of taxes, runs 10% to 12% of all expenses exclusive of taxes. These figures are the result of studies that have been made from time to time by Independent telephone companies here in the Middle West, but we have not been given permission to publish them or to use them in any way excepting as background for editorial matter.

It may be, of course, that the NARUC publication on separations contains more definite figures. Also, we understand that the Toll Compensation Committee of the United States

(*Please turn to page* 13)

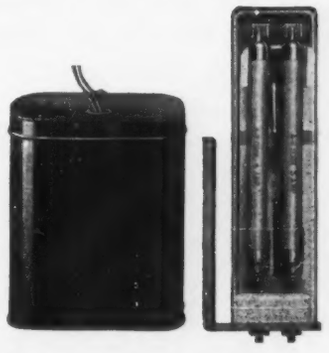
My Neighbors

By BILL PAULSON

"The government can fix prices, Ma'am, but they don't seem able to control the weather and make sure the farmers have something to sell!"

For Good Station Installations Buy These From

SUTTLE



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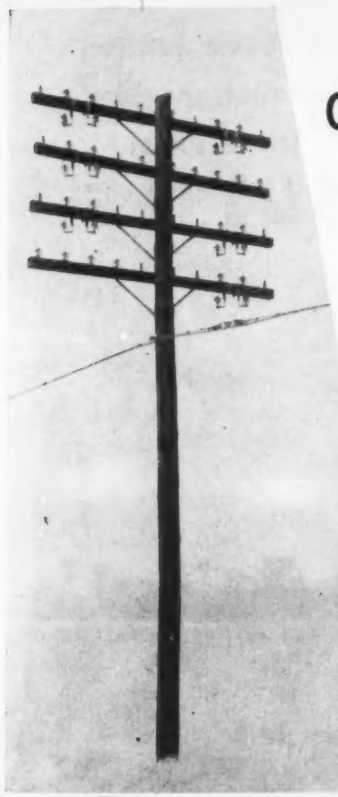
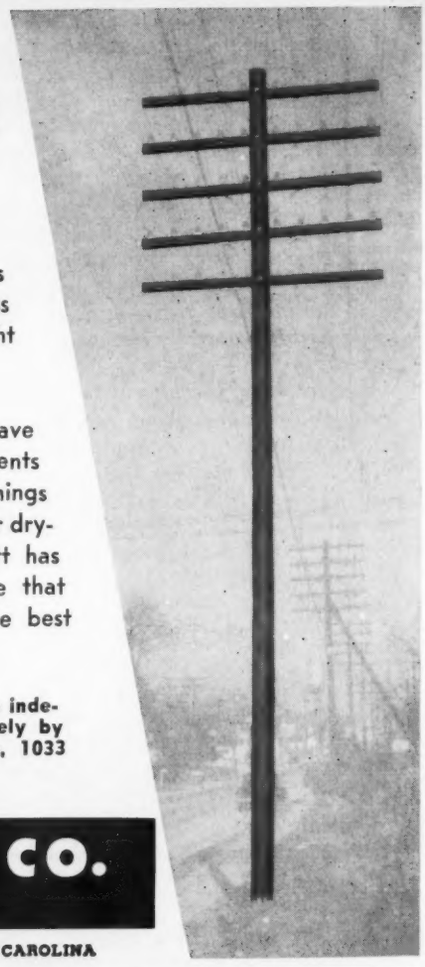


MORE THAN A QUARTER CENTURY PROGRESS IN POLE PRODUCTION

On the left is a Taylor-Colquitt pole set 25 years ago. Still sound and serviceable, it nevertheless stands in sharp contrast with one on the right which was recently installed.

For to good timber and good treatment have been added many improvements and refinements during the years that have passed. In such things as timber selection, machine trimming, vapor drying and precise treatment, Taylor-Colquitt has set constantly higher standards to insure that Taylor-Colquitt poles shall always be the best that can be obtained.

Taylor-Colquitt poles are distributed to independent telephone companies exclusively by Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7, Illinois



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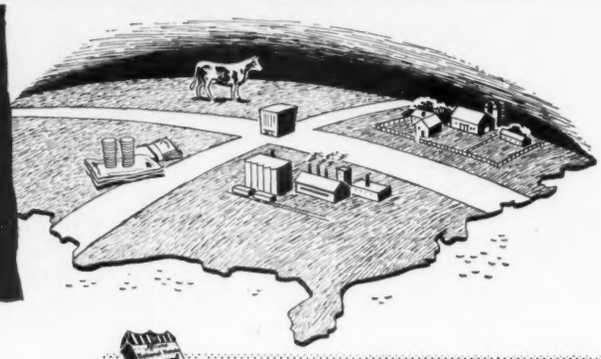

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Traditional host to nation-wide travelers, modern Hotel Paxton stands in the heart of Omaha, the crossroads of the nation. Omaha's newest and finest hotel, the Paxton offers modern air conditioned guest rooms, the smart Pax Room for dining and dancing, the beautiful Mural Lounge for cocktails and for delightful dining the charming Tavern Grill and the tastefully appointed Coffee Shop. For better living in Omaha . . . always pick the Paxton.

Carry a Universal Credit Card! It is convenient and often saves embarrassment. Address application to: Credit Dept., The National Hotel Company, Anico Bldg., Galveston, Texas.

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HOTEL CORTEZ.....El Paso
HOTEL BUCCANEER.....Galveston
HOTEL GALVEZ.....Galveston
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CORONADO COURTS.....Galveston
MIRAMAR COURT.....Galveston

HOTEL PLAZA.....Laredo
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HOTEL FALLS.....Marlin
HOTEL CACTUS.....San Angelo
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HOTEL MONTICELLO.....Norfolk

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INDIANAPOLIS, IND.

HOTEL WASHINGTON
WASHINGTON, D. C.

Independent Telephone Association is making a very comprehensive study now of this same subject. We are sorry that we cannot be more helpful.

THE EDITORS

"Glad You Liked It"

To THE EDITORS: The editorial entitled "The High Cost of Telephone Growth" in the May, 1952, issue of TELEPHONE ENGINEER & MANAGEMENT so concisely stated the effect of increasing investment per telephone due to growth and replacements, that we took the liberty of reproducing it and sending it to our State Managers for their information.

In accordance with your notation, a copy of the reproduction which we sent is attached.

P. E. REMINGTON
VICE PRESIDENT
THE MOUNTAIN STATES TELEPHONE & TELEGRAPH CO.
DENVER, COLORADO

QUOTE

"Concern over the tax problem lies largely in the fact that the low of diminishing returns has set in. Put Federal taxes up another notch and the increase probably won't produce any more revenue. . . . Business can be taxed out of business. And that is precisely what is beginning to happen. The process can kill the goose that lays the golden eggs, and the tax goose is beginning to look pale around its eyes. 'Moderation in all things,' saith the sages. This applies to taxes, as well as cayenne pepper or chocolate candy."— ***(Washington (Iowa) Evening Journal.)***

Coming Conventions

"There has never been a time . . . when it was more necessary for telephone people to take common counsel upon common problems."

Michigan Independent Telephone Association, Olds Hotel, Lansing, Sept. 19.

Arkansas Telephone Association, Arlington Hotel, Hot Springs, Sept. 15 and 16.

Tennessee Telephone Association, Hotel Hermitage, Nashville, Sept. 17 and 18

Rocky Mountain Telephone Association, Newhouse Hotel, Salt Lake City, Utah, Sept. 18 and 19.

United States Independent Telephone Association (annual convention), Conrad Hilton Hotel (formerly the Stevens), Chicago, Oct. 13, 14 and 15.

North Carolina Independent Telephone Association, Carolina Hotel, Pinehurst, Oct. 23 and 24.

Georgia Telephone Association, Henry Grady Hotel, Atlanta, Oct. 27 and 28.

South Carolina Independent Telephone Association, Clemson House, Clemson, Oct. 30 and 31.

Virginia Independent Telephone Association, Roanoke Hotel, Roanoke, Nov. 6 and 7.

Alabama-Mississippi Independent Telephone Association, Jefferson Davis Hotel, Montgomery, Ala., Nov. 10 and 11.

Florida Telephone Association, Orange Court Hotel, Orlando, Nov. 13 and 14.

South Dakota Telephone Association, Cataract Hotel, Sioux Falls, Nov. 13 and 14.

Oklahoma Telephone Association, Tulsa Hotel, Tulsa, Nov. 20 and 21.

"There is no quick, easy way to the acquisition of knowledge . . . but at a convention there will be ready-made answers to perplexing problems."

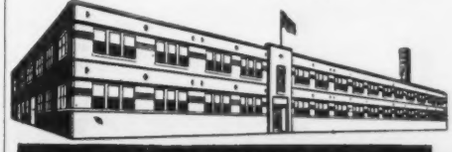
Runzel
TELEPHONE CORDS

HAND SET CORDS

OPERATORS RECEIVER CORDS

OPERATORS BREAST-PLATE CORDS

Quality Cords...
FOR ALL MAKES AND TYPES OF INSTRUMENTS
When cord replacements are needed... specify RUNZEL



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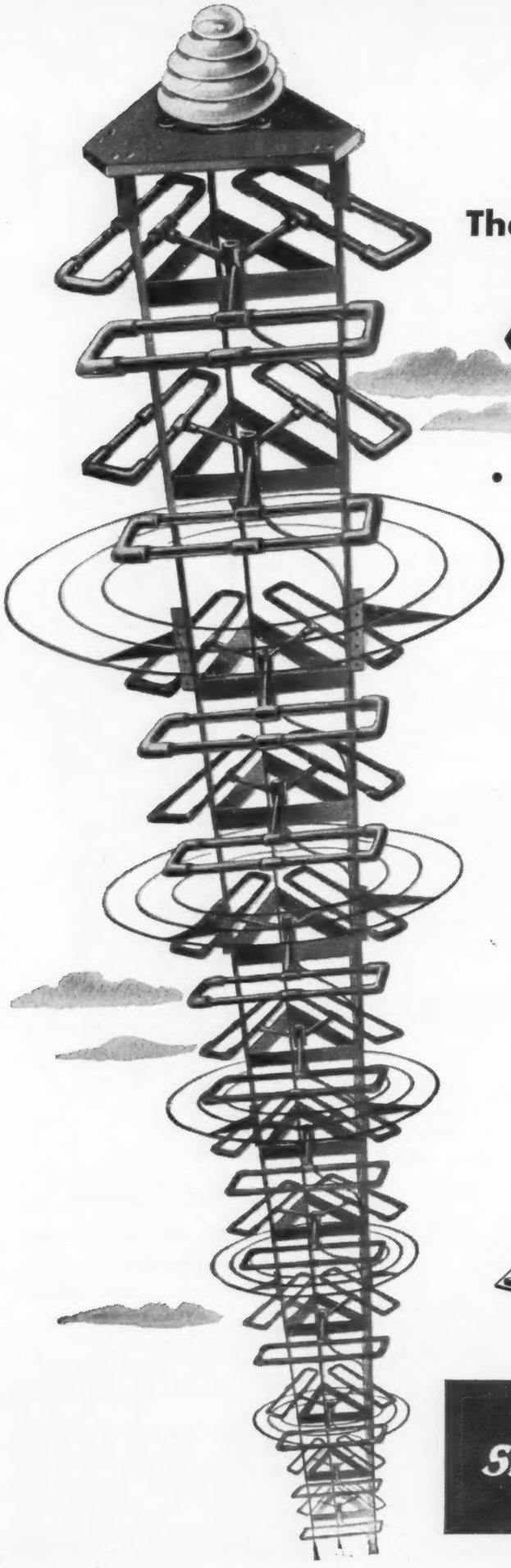

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Today's finest television . . . complete stations for Guadalajara and Monterrey, Mexico . . . Sao Paulo, Brazil . . . Buenos Aires, Argentina . . . is being brought to Latin America by International Standard Electric Corporation, an associate of International Telephone and Telegraph Corporation. Whatever Latin America needs for modern telecommunications . . . television, automatic telephone systems, PTM microwave, carrier, railway radio, marine radio, air navigation aids . . . ISE can provide it.

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NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*
ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH
NEWSLETTERS *on Alternate Weeks*

July 15, 1952

Dear Sir:

8 farm telephone loans, amounting to more than $4 million, ushered out fiscal year 1952 activity for Rural Electrification Administration (REA) as agency issued loan approvals for new or modernized telephone facilities in 7 states -- Ga., Kans., Mont., N. Mex., N. D., Texas & Va. REA staff processing of loan approvals extended over weekend of June 28-30 & up until July 1, when fiscal year 1953 officially began.

Largest loan allocation of group -- $1,987,000 for Northeastern Montana Tel. Cooperative Assoc., Scobey, Mont. -- will be used to improve & expand rural telephone service in Sheridan, Roosevelt, Daniels & Valley Counties in Mont. & in Divide County, N. D.

As nucleus for its system, newly organized cooperative proposes to acquire telephone properties of 5 small Independent companies now providing magneto & switcher service to 487 rural subscribers on 512 miles of line. It will build 2876 miles of new line; rebuild 273 miles of acquired line; add 2135 subscribers who are now without service; & construct 13 new dial central offices at Westby, Froid, Reserve, Dagmar, Outlook, Flaxville, Scobey, Peerless, Glentana, Poplar, Nashua & Lustre, all in Mont., & at Fortuna, N. D.

Other 7 loan approvals went to: Valley Rural Tel. Cooperative, Glasgow, Mont. -- $280,000 allocation to provide rural telephone service in Valley, Phillips & Roosevelt Counties by building 402 miles of new line to bring telephone service for 1st time to 354 rural subscribers: (2) Danielsville & Comer Tel. Co., Comer, Ga. -- $89,000 allocation supplementing original loan of $249,000 approved in Aug. 1950, necessary to offset price increases which have occurred since 1st loan was made. (3) Roosevelt County Rural Tel. Cooperative, Portales, N. Mex. -- $249,000 loan supplementing original $525,000 allocation approved in Oct. 1950, decreased to $486,000 in Aug. 1951, to cover increased construction costs & to provide for 33 extra miles of line to furnish service to 25 additional subscribers not included in first loan.

(4) Brazos Tel. Cooperative, Olney, Tex. -- $467,000 loan to provide modern dial service to 1135 rural subscribers in Young, Throckmorton, Shackelford & Stephen Counties by acquisition of Woodson & Eliasville Tel. Cos., which are now providing magneto & common battery service to 315 rural subscribers over 230 miles of line, & building of 269 miles of new line, rebuilding 220 miles of acquired line & installation of dial central offices at Elbert, Throckmorton, East Olney, South Olney, Proffitt, Loving, Woodson & Eliasville. (5) Peoples Tel. Cooperative, Quitman, Tex. -- $400,000 loan to improve & expand service over 275 miles of line to provide modern dial service to 1332 rural families & establishments by acquisition of Golden Tel. Co., now furnishing magneto service to 125 subscribers over 75 miles of line, building of 200 miles of new line, com-

pletely rebuilding acquired line, & installation of 5 dial central offices at Golden, Yantis, Mt. Vernon, Quitman & Winnsboro.

(6) Home & Green Tel. Cos., Green, Kans. -- $327,000 allocations to improve & expand rural service for 827 subscribers over 289 miles of line in Clay, Riley, Pottawattamie, Marshall & Washington Counties by consolidation of Home & Green Tel. Co., now operating as separate companies, building of 67 miles of new line, rebuilding of 169 miles of existing line & conversion of central offices in Randolph & Green to dial operation; and to the Merchants & Farmers Tel. Co., Beaverdam, Va., -- $274,000 loan for expansion & improvement of existing telephone facilities to provide modern dial service to 665 subscribers over 220 miles of line in Hanover County by building of 136 miles of new line, rebuilding of 83 miles of existing line & installation of new dial central offices at Beaverdam, Gum Tree & Montpelier.

* * *

Application by Pioneer Tel. Assoc., Ulysses, Kans., to operate telephone business in 7 Southwest Kansas counties has been rejected by Kansas Corporation Commission (KCC). Regulatory body said Pioneer's own evidence "indicates the financial impact of its proposals must fall on the vast majority in the area who now have reasonably sufficient and good telephone service at fair and reasonable rates."

Company, a newly organized rural telephone co-operative, has applied for authority to take over operating of 3 private telephone companies & to borrow $825,000 from REA to extend services in sparsely settled rural areas.

Company had planned to operate in all or parts of Grant, Stanton, Haskell, Stevens, Morton, Hamilton, & Kearney counties. At KCC hearings on application early this year, number of Western Kansas ranchers & wheat farmers testified of their need for telephone service.

Opposition to plan of co-operative had been expressed by officials of city of Ulysses, which, according to Jeff Robertson, KCC chairman, would have had to bear much of the financial burden of proposal.

* * *

HIGHLIGHTS: Southwestern States Tel. Co. increased capital stock to $8,000,000, divided into 500,000 shares common stock at $1 ea., & 300,000 shares preferred stock at $25 ea. The 300,000 shares preferred stock are divided into 30,000 shares cumulative preferred stock at $1.25, divided series, & 210,000 shares preferred stock, not yet designated . . . S. & T. Tel. Co-op. Assoc., Goodland, Kans., granted charter with $100,000 capitalization. Elmer E. Euwer is resident agent.

Mr. & Mrs. D. M. Durham sold Greenleaf (Kans.) Tel. Exchange to Mr. & Mrs. E. W. Holden, Jr., formerly of Topeka . . . O. D. & Ruth Wilson, Jay, Okla., purchased Perry County Tel. Co., Perryville, Ark., from Paul Van Dalsem. Sale price was listed at $15,000 . . . Farmers Mutual Tel. Co., Lynden, Wash., elected Gerrit Noteboom & Frank M. Peterson directors . . . Buffalo, Mo., group organizing REA telephone co-op.

Ray Smith

Ray W. Smith, Editor

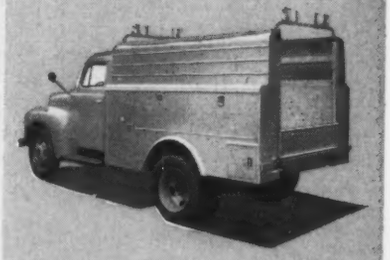
5 Ways to Speed Up Your Service Work

Series 44-90 can be installed on chassis having C.A. dimension of approximately 48″

Series 44-75 for chassis having approximately 40″ C.A. dimension.

Series 44-104 for single or dual rear wheel chassis having 60″ C.A. dimension.

Series 44-L-90 for chassis having approximately 48″ C.A. dimension.



Series 44-L-104 for 60″ C.A. chassis having single or dual rear wheels.

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SERIES 44 and 44-L

SERVICE AND MAINTENANCE BODIES

These five bodies have an impressive record for saving time and money on service jobs. Compartments are equipped to keep tools and supplies safe and orderly — easy to inventory before leaving for the job — easy to find upon arrival. The bodies are adaptable to a wide variety of service operations, and each model can be transferred to a new chassis when the original truck wears out. If you're looking for new ways to get more productive man hours, you'll want full information on Series 44 and 44-L bodies. Why not send for complete details . . . now?

Clip this coupon and attach to your letterhead!

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Please send me complete information on the following:

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Standing beside two of new dial telephones being installed in Junction City, Kans., are Bob Fegan, left, general manager of the Junction City Telephone Co., and at right, Tom Fegan, general supt.—(Junction City Republic Photo.)

Industry News Briefs

Indiana Bell Buys Seven Independents

INDIANA BELL TELEPHONE CO. recently bought seven central and eastern Indiana telephone firms for $1,085,537.36.

The utility companies were purchased from the estate of John T. Detchon, Hoosier utility owner who died July 4, 1951.

The telephone companies were part of an estate valued at $1.95 million. Other Indiana telephone firms yet to be sold from the estate have been appraised at $211,460.

Companies involved in the sale are: Brownsburg Telephone Corp., Central Indiana Telephone Co. of Sheridan, Converse Telephone Co., Sims Telephone Co., Daleville & Middletown Telephone Co., Citizens Telephone Co. of Zionsville and the Union Telephone Co.

Russell Day Buys Blakesburg, Ia. Exchange

DALE SASSEEN has sold the Blakesburg (Ia.) Telephone Co. to Russell Day of Ottumwa, who took possession June 1.

Mr. Day was employed by the Northwestern Bell Telephone Co. at Des Moines, Ia., Ottumwa, and at Nashville, Tenn., for several years.

J. R. Carter Buys Huntsville, Mo. Exchange

MR. AND MRS. J. O. Kent owners and managers for 26 years of the Huntsville (Mo.) Telephone Exchange, have sold the business to J. R. Carter of Salisbury, Mo., part owner of the Salisbury (Mo.) exchange.

Carter has been associated with his uncle, C. M. Carter, in the Salisbury Company since his sale of the exchange at Perry in 1951. He plans to divide his time between the Salisbury and Huntsville exchanges.

Freeport, Minn. Exchange Sold To Albany Mutual

AN AGREEMENT signed recently between officers of the Albany (Minn.) Mutual Telephone Association (AMTA) and Jack Rose, operator of the Freeport (Minn.) Telephone Exchange, placed operation of the Freeport system under control of the newly formed association July 1.

The AMTA had secured an option on the Freeport exchange a year ago, and with the arrival of advance funds from the REA office in Washington was able to take up the option. The Freeport plant was bought for the sum of $18,000, plus additional installation costs that Mr. Rose had made during the past year.

The Albany exchange was taken over by the AMTA on November 1, 1951. The addition of the Freeport exchange to the local exchange gives the AMTA a much larger area to work, with the communities of Albany, Freeport, New Munich, St. Rosa, St. Anthony and part of St. Francis included.

An REA loan of $363,000 was approved to the association for the building of a complete modern dial system for the area last fall. The purchase of the Albany and Freeport exchanges was made possible by the $30 membership fee secured from over 400 telephone users, preferred stock sold to businessmen, and the REA advance of $43,900.

C. C. Jung Purchases Minnesota Exchange

CLARENCE C. JUNG of St. Cloud, Minn., has purchased the building and equipment of the Valley Telephone Co., Brown's Valley, Minn., from Mr. and Mrs. A. T. Eggena.

Mr. and Mrs. Eggena have owned the exchange the past 17 years having taken over the property when it served only 185 telephones. The company now has 450 subscribers.

Robert Dutcher Buys Araphoe, Neb., Company

MR. AND MRS. Robert Dutcher of Omaha, Neb., have purchased controlling interest in the Arapahoe (Neb.) Telephone Co. from T. H. Pollock of Plattsmouth, Neb.

Mr. Dutcher was a communication worker for the Union Pacific Railroad before purchasing the company. He also has worked as a lineman in other capacities with the Bell System.

New Co-op Formed At Mound City, S. D.

AN ORGANIZATION meeting of the Valley Telephone Cooperative was held in Mound City, S. D., recently and a nine-member board was organized, replacing the original five-member board.

New members elected were Dave Wittmeier of Pollock, Joe Wolf, Herreid, Ted Molsted, Glenham and Henry Ochsner, Herreid. Old members remaining on the board were E. O.

In any **MODERN** switchboard installation–

Photo courtesy of Stromberg-Carlson

the choice is **ACCURATE AUTOMATIC TOLL TIME CALCULATING AND RECORDING**

by **CALCULAGRAPH**

Because they quickly save many times their initial cost, CALCULAGRAPH permanent printed records eliminate switchboard detail work, speed service. Accuracy-to-the-second permits collection of all the revenue due on every call. CALCULAGRAPHS are precision instruments featuring high visibility dials, smooth silent lever action. Available in several models, they can be engineered into new equipment by your switchboard builder or easily included in your present set-up. For complete information just call or write.

CALCULAGRAPH COMPANY

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THE STANDARD OF ACCURACY SINCE 1892

HANG THE LOAD ON HUBBARD HARDWARE

HUBBARD STRAIN PLATES

Hot Galvanized

No. 7575

No. 7576

No. 7577

Hubbard Strain Plates protect pole fibres from being cut by messenger or guy strand. They are furnished standard (No. 7575); with offset to fit 1-1/4-inch maximum diameter ground wire moulding (No. 7576); and with guy hooks (No. 7577). All styles have nail holes. No. 7577 has one 11/16-inch guy hook hole and two 7/16-inch lag screw holes. All are hot galvanized.

HUBBARD HARDWARE FOR THE TELEPHONE LINE

OVERHEAD

Cable Suspension Material—Wireholders
Pole Seats and Balconies—Clevises
Braces—Drive Hooks—Messenger Dead Ends—Extension Arms—Long Span Material—Pins—Clamps—Guards—Stubbing Bands—Guy Protectors—Guy Clamps
Pole Struts—Clips—Straps—Hangers
Carriage Bolts—Rings—Transposition Brackets—Eye Bolts—Pole, Corner and House Brackets—Guy Hooks—Strain Plates—Storm Guy Straps—Lags—Machine and Hubeye Bolts—Sidewalk Guys
REA Telephone Hardware

UNDERGROUND

Cable Racks—Manhole Ladders and Steps
Pulling-in Irons—Expanding Anchors
Cable Shields—Screw Steelwing Anchors
Anchor Rods—Ground Rods and Clamps

HUBBARD AND COMPANY
ESTABLISHED 1845
PITTSBURGH • CHICAGO • OAKLAND, CALIFORNIA
"Hang the Load on Hubbard Hardware!"

Tronson, Glenham, Art Thorsen, Pollock, John Kirschenmann, Artas, and Merkel of Glenham. R. Kramlich of Mound City is the Treasurer and H. P. Ochsner of Herreid the secretary, replacing O. W. Robbins who resigned. R. R. Slocum is the attorney for the organization.

Kalispell, Mont., Converts to Strowger Automatic

THE PROGRESSIVE agricultural and lumber town of Kalispell, Mont., took another step forward on May 24, 1952, when the Mountain States Power Co. cut in service a new 2000-line Strowger Automatic switchboard. The Mountain States company owns

Shown standing before a line finder frame in the new Kalispell central office are: J. H. Conn, auditor, Mountain States Power Co.; C. J. Pracht, operating engineer, Automatic Electric Co.; and Bert Johnson, commercial manager, and Merle Ebbe, division manager, both of Mountain States Power Co.

and operates the telephone exchanges in Kalispell and a number of other communities in the surrounding area. Kalispell is also the proposed site of an aluminum plant to be built by Anaconda Copper and is near Hungry Horse Dam, the third highest in the world.

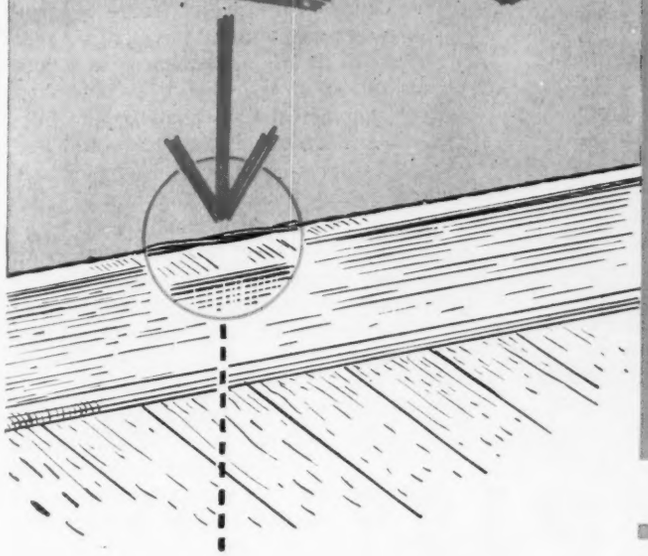
Months of planning and preparation between Mountain States Power Co. officials and Automatic Electric engineers were necessary before the cutover, which actually took less than four minutes, could be completed.

Illinois Co-op To Seek REA Loan

A COMMITTEE of the newly-organized Adams Telephone Cooperative has presented a formal application for a loan of $500,000 to the Rural Electrification Administration.

The money will be used to con-

Save Copper Here, too



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...Use Copperweld TRADE MARK INSIDE TELEPHONE WIRE

Here's another copper-saving product—Copperweld* Inside Telephone Wire—that will give you all the important advantages obtainable from Copperweld Line Wire and Drop Wire—lower cost, greater strength, ample conductivity, and permanence.

By using Copperweld Inside Telephone Wire, your supply of copper goes further—enables you to install more telephones with less copper, despite the copper shortage. Write us today for more information.

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COSTS LESS

AMPLE CONDUCTIVITY

STRONGER THAN COPPER

NON-RUSTING

PLIABLE—EASY TO INSTALL

USED BY THE WORLD'S LEADING TELEPHONE SYSTEMS

AND IT SAVES COPPER

COPPERWELD STEEL COMPANY

Glassport, Pa.

SALES OFFICES IN PRINCIPAL CITIES

Copperweld TRADE MARK **INSIDE TELEPHONE WIRE**

SOLD BY LEADING DISTRIBUTORS

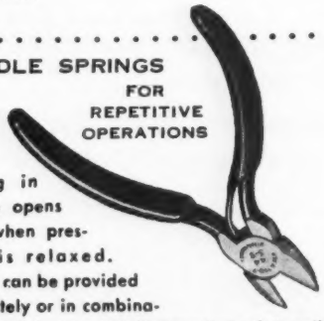
these handles Speed the job

UTICA tools are available with these special handles designed to increase comfort and efficiency. Additional cost is modest.

"CUSHION-GRIP" PLASTIC

"Cushion Grip" dipped soft plastic handles give extra comfort. Particularly effective for women operators on production lines. Standard colors are red, blue and black.

HANDLE SPRINGS FOR REPETITIVE OPERATIONS



Spring in handle opens jaws when pressure is relaxed. Spring can be provided separately or in combination with "Cushion Grip" dipped plastic handles. Speeds the work by reducing hand fatigue.

KNURLED PLASTIC

Red plastic handles with deep knurling for a positive but comfortable grip. Non-burning and non-explosive they will stand up under extreme temperature changes. Easily applied—"just hammer them on."

Ask your industrial distributor about UTICA pliers with special handles and handle springs "Utica Tools Add Power to Your Hands"®

UTICA® DROP FORGE AND TOOL CORPORATION UTICA 4 NEW YORK

In Canada
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struct a telephone system that will serve residents in the Ursa, Loraine and Meyer, Ill., area.

More than 1,000 persons in the area have signed up for service that would be provided by the co-operative. Harold Harkness of Camp Point, Ill., co-op coordinator, has announced that the next expansion step for the co-operative will be to develop the area around Camden, Brookly and Huntsville in Schuyler county, Ill. More than 300 subscribers in that area have made application for service through the new co-operative.

Texas Co-op Awards $99,643.26 Contract

ANNOUNCEMENT was made recently by the Eastex Telephone Cooperative, Inc., Henderson, Texas, of the awarding of a contract for 100 miles of pole line facilities to the Utilities Construction Co., Tulsa, Okla., for $99,643.26. This bid was $12,465.72 lower than the next best bid for the work.

Officers of the Eastex co-op are Royce Moore, president; Otho Morris, vice-president; John T. Lock, secretary-treasurer.

REA Liberalizes Area Coverage Requirements

LIBERALIZED area coverage requirements of Rural Electrification Administration's farm telephone loan program have been outlined in an administrative bulletin distributed to REA personnel. It permits loans to serve only a portion of an area under certain circumstances specified in the statement.

"Where the loan application relates to only a portion of the telephone service area," the bulletin states, "which shall include a proportionate share of the less desirable territory, the borrower shall furnish a detailed statement which shall (1) explain the reasons for selection of the partial area; (2) establish that the proposed development is consistent with ultimate extension of service throughout the entire telephone service area; and (3) present a plan for extending service to the entire area.

Loans will not be made to provide service to only a portion of the telephone service area unless the proposed development is consistent with ultimate extension of service throughout the entire service area."

The statement goes on, "Where the telephone service area is partially within the boundaries of any incorporated or unincorporated city, village, or borough having a population in excess of 1500 inhabitants, the borrower will not be required to include such non-rural portions of the area in its program for area coverage development. This shall be true regardless of whether or not the application requests funds for financing the construction or improvement of facilities located within such non-rural areas and that request is justified on the basis it is necessary in order to furnish or improve service in rural areas."

Discussing facilities, the statement says that "The borrower shall provide such facilities as may be necessary to enable it to serve all persons included in the project for which the loan is made without payment by said persons of any extra charge as a contribution to the cost of construction of the facilities. It shall be the borrower's responsibility to obtain all necessary approvals from appropriate regulatory bodies to enable it to satisfy the above requirement."

The borrower, it is provided, shall serve "to the widest extent practicable" persons desiring service after completion of the project without mileage or other construction charges. "As a minimum requirement", it is added, the borrower should provide service without any contribution to "at least" the unserved persons who meet either of two requirements—that overall density (number of subscribers per route mile) of the applicant's system will not be reduced below that contemplated in the loan, or that the cost of constructing the required line extension will not be more than seven times the estimated annual exchange revenue from the prospective subscriber.

Levering, Mich. Company Plans Service Extension

THE MICHIGAN Public Service Commission has granted the Levering (Mich.) Telephone Co. a certificate of convenience allowing it to extend service to the Brutus area.

E. L. Cadwell, owner of the Levering company said that approximately $10,000 wil be spent in extending telephone service to between 80 and 100 subscribers in the Brutus area. At the present time about 17 homes are served by a cooperatively owned company.

New Co-op Planned At St. Anthony, N. D.

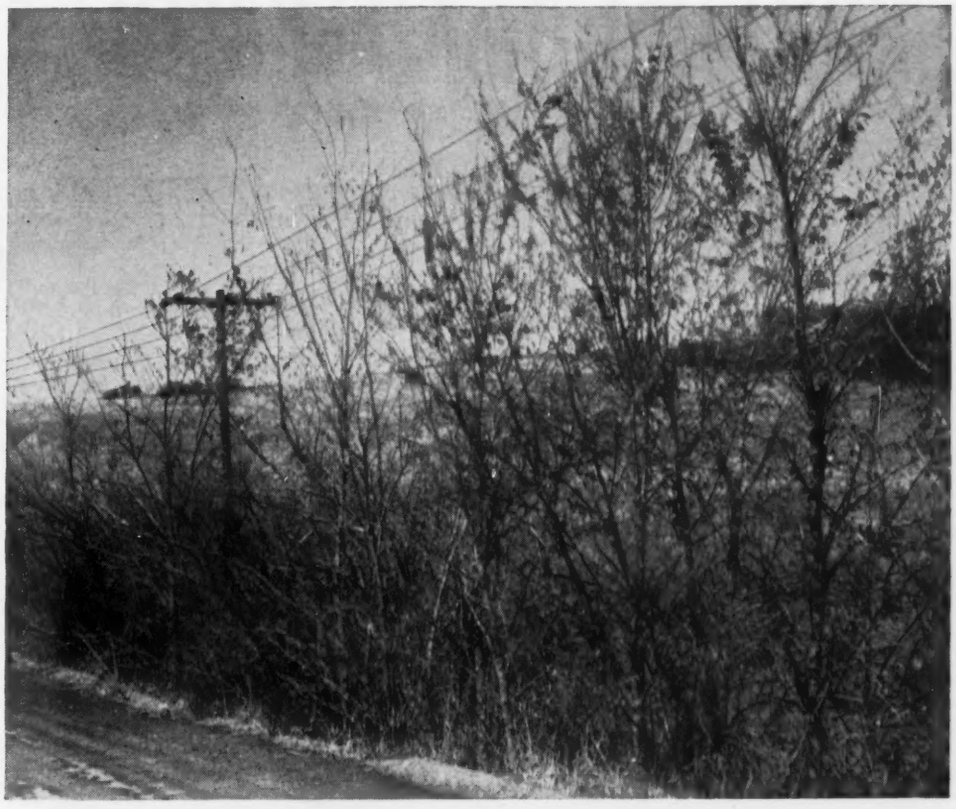
ORGANIZATIONAL work is now underway on the formation of a rural telephone association in Morton County, N. D.

The initial meeting held at Bismarck, N. D., was attended by about

Thompson Chemicals

FIRST NAME IN BRUSH KILLERS

EXTRA CREEP for EXTRA KILL with



LOW VOLATILE BRAMBLE-WEEDICIDE

Bramble-Weedicide contains H-31, the Thompson patented creeping agent because field tests prove it definitely steps up killing effect.

Woody growth control is also intensified by the use of low volatile pentyl esters. The molecular structures are absorption-rated to assure greatest herbicidal effect. For these reasons, Bramble-Weedicide is more effective and economical than older chemical controls..first choice of more and more utilities.

Whether you spray by truck, tractor, knapsack, plane or basal bark . . . specify Bramble-Weedicide.

Thompson manufactures many types of brush and weed killers. Write for helpful information on specific problems.

WHEN TO SPRAY BRAMBLCIDE

BRAMBLCIDE is the Thompson low volatile pentyl esters of 2, 4, 5-T fortified with H-31 for extra killing surface creep. BRAMBLCIDE is used for controlling mesquite, huisache, Mc Cartney's rose, osage orange, prickly pear, oak, post, and black jack either by foliage spray or basal stem. Some utilities report that despite a slightly higher cost, (a smaller quantity is needed) it is the preferred herbicide for basal bark or stump treatment.

Thompson Chemicals

other superior

WEED & BRUSH KILLERS

- **WEEDICIDES:** 2,4-D Esters and Amines
- **BRAMBLCIDE** 2,4,5-T Low Volatile Ester
- **PHYTOCIDE** } General Weed Killers
- **PENTA-WEEDICIDE** }

Send for helpful booklet:
HOW TO CLEAR RIGHTS-OF-WAY

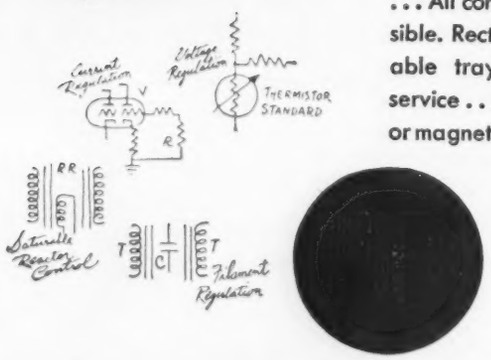
Thompson **CHEMICALS CORP.**

St. Louis 3, Missouri
Los Angeles 27, California

BUILT LIKE A SKYSCRAPER

. . . TO SAVE FLOOR SPACE

THE idea of the skyscraper is to best utilize extremely valuable land space. The large PECo battery chargers are built on the skyscraper principle—compact and upright—to save you increasingly valuable *floor* space. Actually, they occupy less than 1 sq. ft. per KW . . . No special foundations are necessary . . . Capacities can be increased by operation of two or more chargers in parallel . . . All control sections are readily accessible. Rectifier assemblies are on removable trays to facilitate inspection or service . . . Fully automatic; electronically or magnetically controlled and regulated; accurate floating voltage control within ±1% . . . Complete range of sizes up to 10 KW . . . Write for all the facts.



POWER EQUIPMENT Company

Specialists in Controlled Rectifiers Since 1935

55 ANTOINETTE STREET DETROIT 2, MICHIGAN

100 people, with 46 farmers signing membership applications.

Officials of the Mor-Gran-Sou Electric Co-op explained the organization and operation of a telephone association and the over-all picture in the state.

Elected as temporary directors were Oscar Carlson and Dominick Morrell who will appoint two farmers in each township in the St. Anthony area to contact farmers who were not present at the meeting.

Gen. Code Retires From Gary Group Post

ANNOUNCEMENT has been made by F. S. Spring, president of Theodore Gary & Co. and of its two principal subsidiaries, that Major General James A. Code, Jr., relinquished his position as chief executive of the Gary Group, effective June 30.

General Code joined the Gary Group in January, 1946, shortly after retirement from his position as Assistant Chief Signal Officer of the U. S. Army. In the seven years since that time, he has taken a leading part in the executive direction of the various Gary Group companies, which include telephone operating organizations in the United States and abroad, and companies of the manufacturing division, of which Automatic Electric Co., Chicago, is the principal unit.

General Code has announced that he is returning with Mrs. Code to his home in Palo Alto, Calif., where the majority of the family still reside.

Engineers Start Survey For Kentucky Co-op

WOODROW W. BARBER, manager of the Mountain Rural Telephone Cooperative, Campton, Ky., announced recently that 100 miles of proposed telephone lines have been staked out in Elliott County, Ky., and two engineering crews formerly working in Elliott are being moved to the Ezel and Hazel Green sections of Morgan and Wolfe counties to commence staking out lines in those areas.

The Mountain Rural Telephone Cooperative has been granted an REA loan of $455,000 with which to build a modern dial telephone system in Elliot, Morgan and Wolfe counties.

Mr. Barber stated that staking of the lines through a community does not necessarily mean that a telephone line will actually be constructed. He emphasized that REA estimates that a minimum of approximately three subscribers per mile must sign to use the line before it will approve construction of a telephone line.

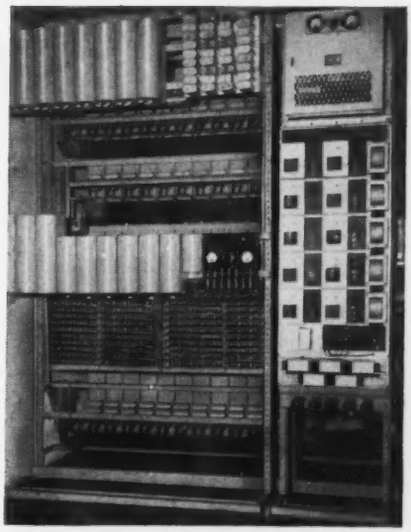
4 MORE CONVERSIONS for Michigan Associated Telephone Company

Cut-overs comprise 1790 lines of

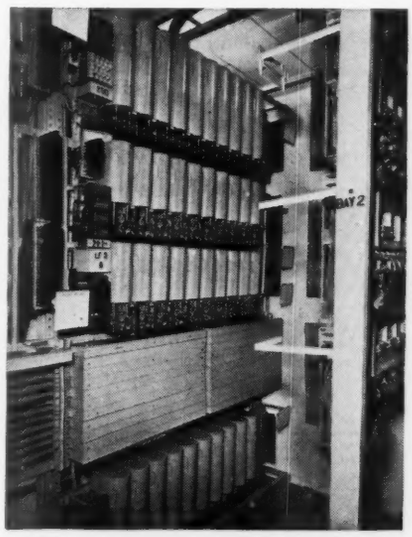
Federal STEP-BY-STEP Dial Switching Equipment

CONSTANTINE, MICHIGAN, recently became the fourth of a group of manual-to-dial conversions completed by Michigan Associated Telephone Company, subsidiary of General Telephone Corporation. Other communities are De Witt, White Pigeon and Whitehall, Michigan.

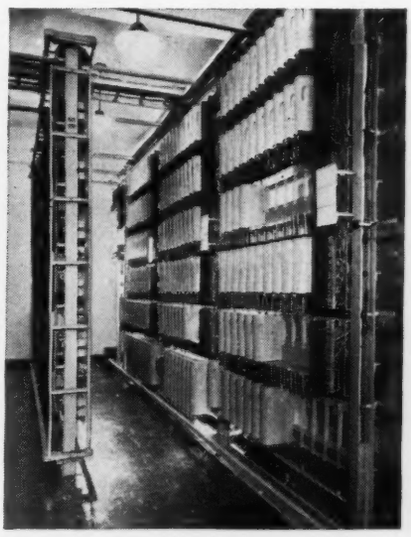
By providing Federal Step-by-Step dial switching equipment, Michigan Associated brings to these thriving and expanding areas the fast and efficient service needed to meet the communication requirements of today's subscribers.



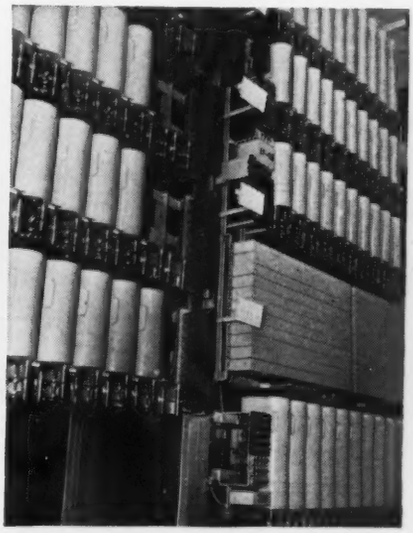
CONSTANTINE
Repeater Shelf with CX Dialing Circuits; Power Shelf and Charger and Ringing Converter Frame



DE WITT
Line Finder and Connector Frame



WHITEHALL
Selector and Repeater Frames



WHITE PIGEON
Line Finder and Connector Frames

Federal offers attractive delivery dates on its complete line of automatic switching equipment — for any size exchange. For details, write to Telephone Sales Department

Federal Telephone and Radio Corporation

100 KINGSLAND ROAD, CLIFTON, NEW JERSEY
In Canada: Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.
Export Distributors: International Standard Electric Corp., 67 Broad St., N.Y.

FEDERAL TELEPHONE & RADIO — FTR — An IT&T Associate

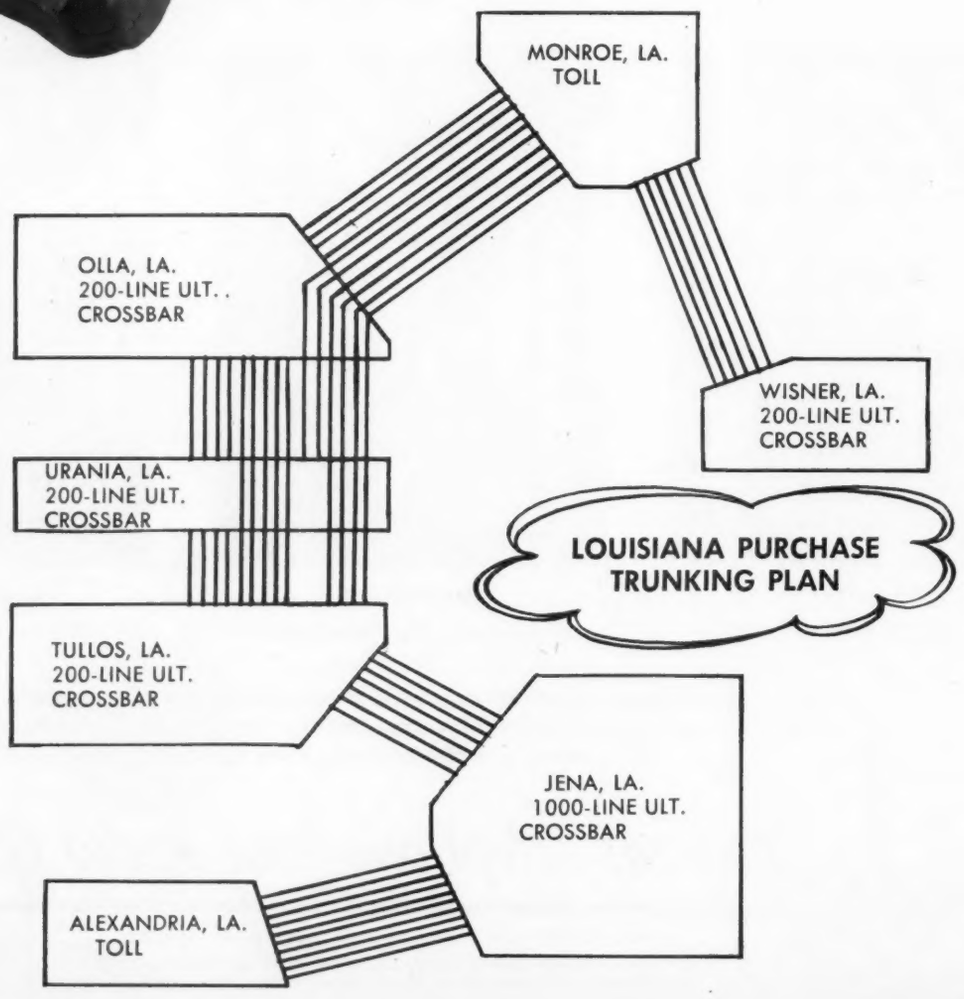
the "Louisiana Purchase" - 1952

Al M. Cobb, reliable, industrious manager of the La Salle Telephone Company, Inc. has completed the purchase of Kellogg Crossbar systems for all the exchanges owned by his company.

The La Salle Telephone Company now in its twentieth year of operation has always been a firm believer in Kellogg equipment and has never hesitated to provide the most modern facilities possible.

Although Mr. Cobb is a comparitive new-comer to the telephone field, he has brought with him many new ideas in the aggressive management of telephone properties.

Mr. Cobb was quick to realize that only Crossbar equipment could offer the type of service which he wished to furnish his subscribers.



Another Achievement Accomplished by KELLOGG *Crossbar* SWITCHING EQUIPMENT

The "Louisiana Purchase" — one purchase order covered the entire system — serves all major towns of LaSalle Parish, as well as the Wisner Exchange located in Franklin Parish. (Note: In Louisiana the word "Parish" corresponds to "County" in all other states.) . . . The "Louisiana Purchase" system includes inter-city dialing between all towns of the Jena group, and is arranged in a universal numbering manner whereby the instructions to subscribers are kept at a minimum. Inter-toll dialing from distant points is accomplished without the necessity of operator assistance or delays. All subscribers of the Jena group are included in the same universal directory.

IMPORTANT KELLOGG CROSSBAR ADVANTAGES 10-10,000 LINES PLUS

Minimum Maintenance Costs

All connections established through precious metal contacts by relay type action only. No mechanical routining necessary. The maintenance of Kellogg Crossbar involves no more effort or cost than line relay equipment.

Drawer Mounted Crossbar Switches Individually Covered

Switches can be pulled out like file cabinet drawers for inspection. They need not be taken out of service for this operation.

Lower Installation Costs For Additions

All Kellogg Crossbar units are factory tested and completely wired to plug-in terminals. No wiring or soldering is required to add Crossbar units.

No Multiple Wiring

The contact multiples are a built-in feature of the Kellogg Crossbar Switch.

Full Station Intercept

Crossbar Equipment is Factory Wired

Frames wired for their ultimate capacity regardless of initial equipment. All Crossbar Switches and relay units are factory wired and ready for installation by merely plugging in.

PBX Service

Connector frames are prewired for PBX service. This service can be furnished or added to any 100 line group without equipment or wiring changes.

Maximum Expansion

Kellogg Crossbar switching equipment can grow from 10 to 10,000 lines.

Instantaneous Seizure of Paths

This feature makes possible instantaneous inter-office dialing between all required points. Kellogg Crossbar switches operate in one movement in no more time or travel than it takes for the average relay to operate. This speed is such that Kellogg Crossbar can accommodate the high standards of nation-wide inter-toll dialing without altering the equipment.

High Traffic Capacity

Crossbar can handle more calls per unit of equipment than any other switching system. Each Crossbar switch has multiple paths. From 10 to 20 simultaneous calls can be placed through these switches.

Long Life

Minimum movement means minimum wear. Switches are constructed of simple, tough, long wearing parts. Each relay spring has twin precious metal contacts and is designed for minimum wear and maintenance.

VACATION NOTICE

The Kellogg Factory and Chicago Branch will be closed for vacation, July 14th through July 25th.

SINCE 1897 KELLOGG

AN IT&T ASSOCIATE

KELLOGG *Crossbar*

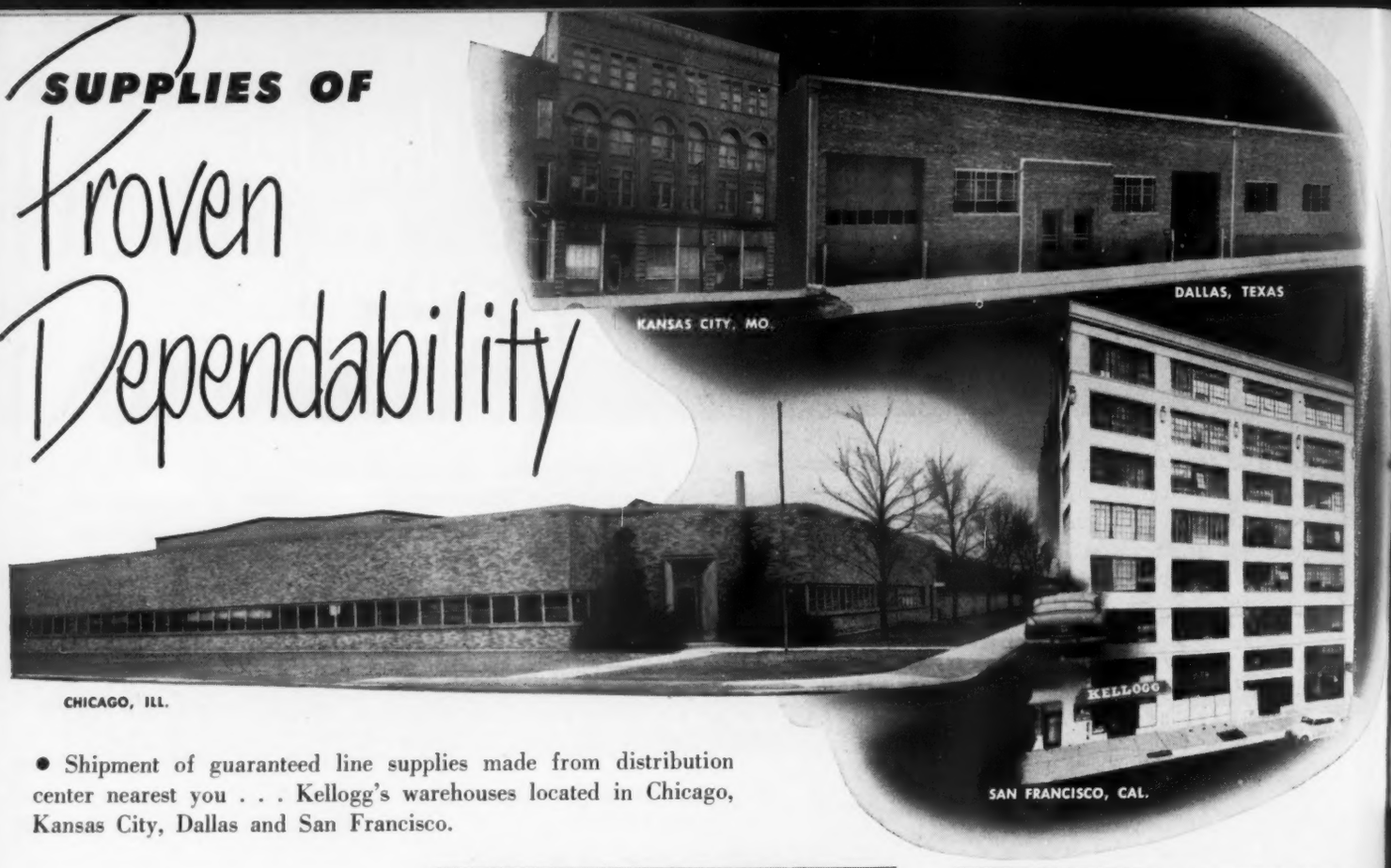
10 to 10,000 Lines

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

6650 South Cicero Avenue • Chicago 38, Illinois

An associate of International Telephone and Telegraph Corporation

SUPPLIES OF Proven Dependability



• Shipment of guaranteed line supplies made from distribution center nearest you . . . Kellogg's warehouses located in Chicago, Kansas City, Dallas and San Francisco.

The following nationally-known manufacturers of supplies for the independent telephone field are participating in the 1952 Kellogg Co-Operative Campaign.

American Creosote Works, Inc.

American Structural Products Co.

Ansonia Electrical Company

Bishop Manufacturing Corp.

Boston Woven Hose and Rubber Company

Churchill Cabinet Company

Continental Cross-Arm Co.

Cook Electric Company

Copperweld Steel Company

The Electric Storage Battery Co.

General Insulated Wire Works, Inc.

Gould-National Battery Inc.

W. A. Hammond Drierite Company

Indiana Steel & Wire Company

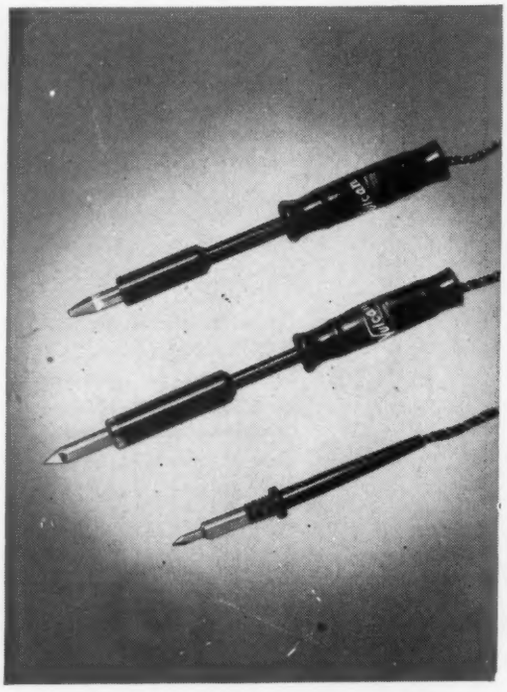
Kester Solder Company

Lorain Products Corporation

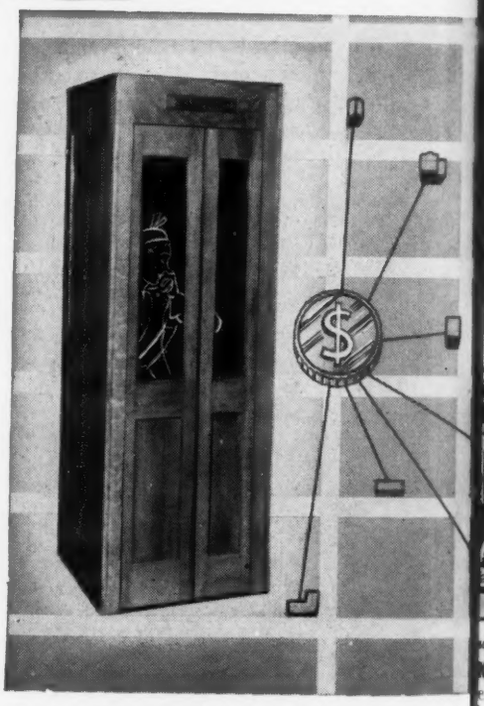
T. J. Moss Tie Company

National Carbon Company
A Division of Union Carbide and Carbon Corporation

National Telephone Supply Co.



You'll Find Soldering is Easy . . . workmanship neater with famous Vulcan Soldering Irons. Available in five sizes—either plug or screw tip. The high-powered heating element assures even proper heat and long satisfying service. Made by VULCAN ELECTRIC COMPANY.



Make Every Pay Station a Paying Location! Churchill booths attract extra patronage everywhere. That's because they give the public privacy, roominess and comfort. Above is CHURCHILL CABINET CO.'s No. 100 booth, with door-controlled lightswitch and ventilator.

Newman Manufacturing Company

Paragon Electric Company

Ray-O-Vac Company

Raytheon Manufacturing Co.

Reliable Electric Company

M. M. Rhodes & Sons Company

Schauer Manufacturing Corp.

Taca Cable Stripper Manufacturing Co.

Vulcan Electric Company

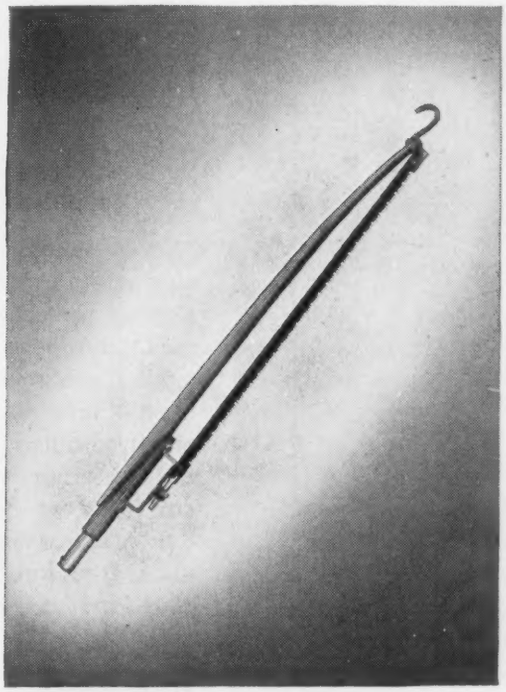
Weller Electric Corp.

Cut "Trouble Shooting" Expense!—Install PARAGON ELECTRIC COMPANY'S top quality drop wire. Great tensile strength, high conductivity, and perfect adhesion are some of its outstanding qualities. This drop wire is available in Copperweld or High Tensile BB Bronze.

It Regulates—it Compensates. Flotrol Battery Chargers assure continuous power savings by low standby losses combined with high overall efficiency. Compensation for variation in input voltage is automatic and practicallly instantaneous. Made by LORAIN PRODUCTS CORP.

The Time-Tested Steel Strand. A ductile, adhering zinc coating applied by the famous Crapo Galvanizing Process, provides lasting protection against corrosion in INDIANA STEEL & WIRE CO. Crapo Steel Strand. Its rugged strength minimizes maintenance expenses.

"Hostilities will cease on the whole front on Nov. 11 at 11 A.M." Thus went the telegram ending World War I. In peace and war, research has enabled Hemingway Insulators, made by AMERICAN STRUCTURAL PRODUCTS CO., to provide increasing efficiency.



To Cut Better—Faster—Easier use the tree saw equipped with the Bushman Blue Blade. Cuts limbs up to 4" in diameter, and by under cutting, limbs up to 8" in diameter. Extension handles can be used or additional ones secured. Made by NEWMAN MANUFACTURING CO.

Bull Dog Splicing Compound—another BOSTON WOVEN HOSE & RUBBER COMPANY famous product. In a class by itself for high resistance to moisture and electricity. And, this top quality splicing compound is self-vulcanizing into a solid, watertight joint!

Send Your Next Order for Supplies to

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406 South Main Street, LOS ANGELES 13, CALIF.
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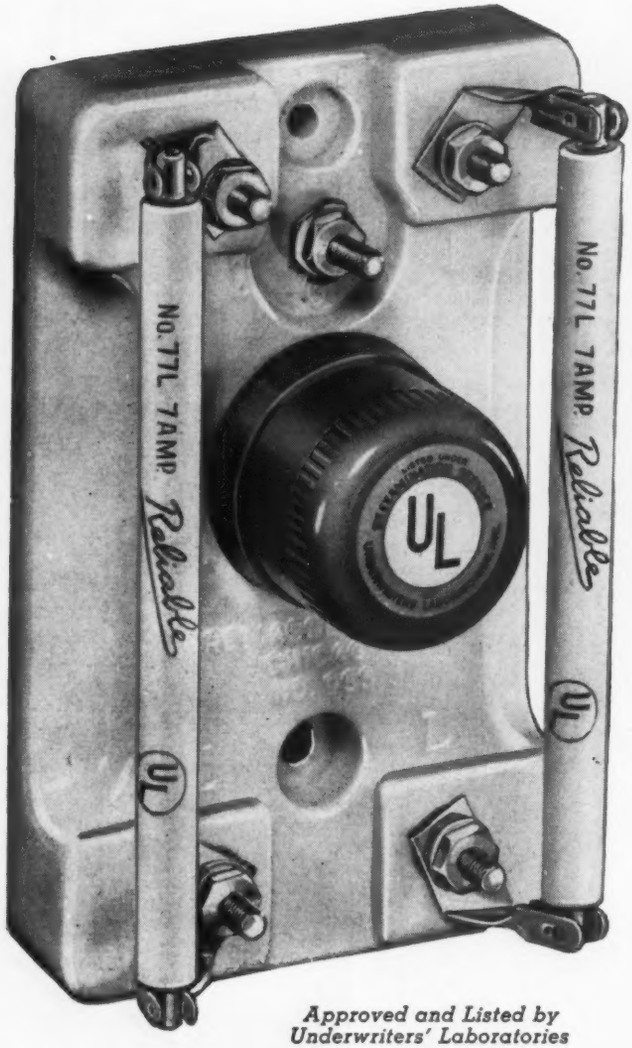


Approved and Listed by Underwriters' Laboratories

The "955-A" Station Protector

In station protectors the difference will show up in the field.

The very simplicity of the "955-A" is your guarantee of trouble-free and enduring station protection. Design advantages, plus the famous P-495 Self-Cleaning Saw-tooth Discharge Blocks, make the difference. Static discharges or surges are instantly drained without danger of leaving the line grounded. Why not ask to see a sample of the "955-A" for first-hand inspection and convince yourself of the difference. Standardize on "955-A's" — A Reliable Product.

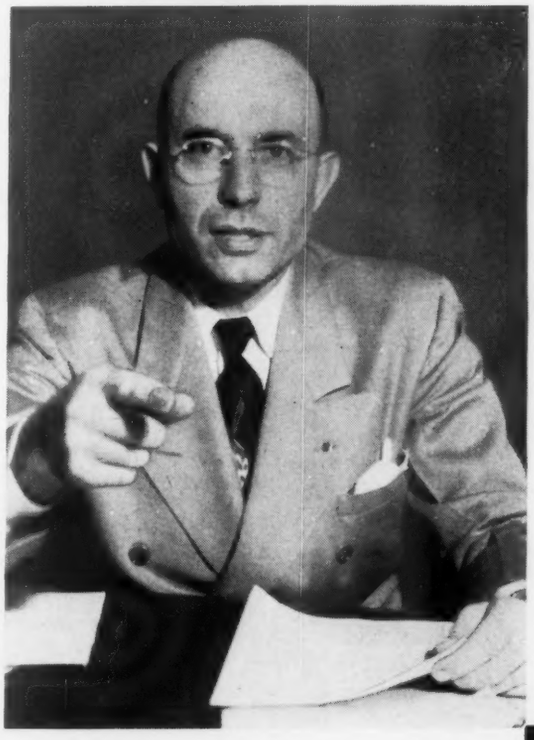
RELIABLE ELECTRIC COMPANY
3145 CARROLL AVENUE
CHICAGO 12, ILLINOIS

Reliable

Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.

OVER 45 YEARS SERVICE TO THE TELEPHONE INDUSTRY

Automatic Electric LEADERS IN CARRIER COMMUNICATION Lenkurt



J. N. Petrie, Manager Carrier and Radio Sales, Automatic Electric Sales Corporation

. . . did you know

Suppressed Carrier

Serves 99%

of the world's carrier mileage?

This is your BEST proof that Lenkurt SUPPRESSED Carrier is your wisest choice!

Lenkurt SUPPRESSED Carrier offers you all these advantages:

- Requires only one-fourth as much power to transmit the same speech energy as other systems. This means fewer components, less power consumption, fewer tubes.
- Gives you 6 db higher signal-to-noise ratio.
- Insures less interference to parallel carrier systems on other wires since inverted and staggered allocations are possible.
- Means less inter-channel crosstalk from defective line splices.
- Makes toll dial signaling applications simple and economical.
- Lends itself readily to economical automatic pilot channel transmission level regulation.

ALL Lenkurt Carrier Systems are of the SUPPRESSED type. Remember, too: Lenkurt is the originator and developer of the dollar-saving "stackable" carrier system—Lenkurt equipment is world-famous for performance PLUS economy! Write for our new catalog GC-1 today.

Manufactured for

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

NORTH TELEPHONES

DESIGNED FOR DESK USE

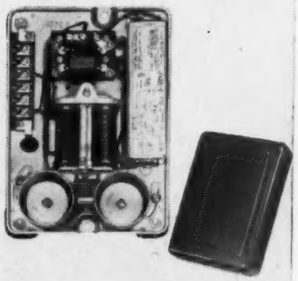
The neatest and most foolproof desk phone because it's made just right for that *specific* purpose. The North handset lifts and returns easily, without unnecessary fumbling or banging. Subscribers love it.

DESIGNED FOR WALL USE

Because it is made *specifically* for hang-up installation, there is no compromise in arrangement of hookswitch or dial. Best-looking, best-working wallset for any system. Subscribers enjoy it.

DESIGNED TO FIT THEM ALL

North bases, complete with ringers and condensers, are interchangeable between desk-sets, wall-sets and ringer boxes for extension phones. Only one base to stock for all purposes. *You'll* like that.



Beauty...Utility...Simplicity

THE NORTH ELECTRIC MANUFACTURING COMPANY

Originators of ***ALL RELAY*** *Systems of Automatic Switching*

655 South Market Street, Galion, Ohio, U.S.A.

Editorial

Are Profits A Good Thing?

We have a boyhood friend who teaches ancient languages or some such stuff in a large university, and who takes a dim view of business profits.

Our friend has never been connected with any business. So he has never had to struggle to meet a payroll, or experienced a sleepless night over some important business problem.

So, like so many other people who should know better, he has looked upon business profits as a sort of graft—something the seller, was taking out of the buyer's hide.

Accordingly, he has been convinced that the price of any given thing is increased by the amount of profit on it; that, if there was no profit on it, he could buy it more cheaply.

Recently our friend received a free lesson in economics. He is what is politely called "stout", and his feet have always bothered him.

But a year ago he found a special type of "foot comfort" shoe which eased his painful feet and made him happy.

Then last month, when he tried to buy another pair of these shoes, he found that they were no longer on the market. The manufacturer, to whom our friend appealed, informed him politely and with regret that experience had shown that not enough of these shoes could be sold to make the manufacture of them profitable. So the line had been discontinued.

So our friend has learned, the hard way, what profit means in a capitalistic system

He has learned that practically none of all the things he buys would be available to him at all if somebody could not make a profit on them.

And he has learned that if enough of a given thing can be sold, the cost of it can usually be reduced to a point where the savings in price to the buyer will be much more than any profit anybody makes on it.

This is all so simple that it is surprising that any person should question the necessity for profits in our capitalistic system.

Yet there seems to be a smear campaign going on against business profits, and undoubtedly some people are being fooled by it.

Even some of the bureaucrats in our government are apparently opposed to profits by business, and certainly many of them would like to see the government controlling, and limiting, business profits.

This, of course, does not make good sense. The Federal government lives mostly—and also handsomely, we would say—on income and excess profits taxes paid to it on business profits.

Even most of the income taxes taken by the government from individuals are on wages and salaries paid to individuals out of the income of businesses.

The plain fact is, as anyone can see who thinks the matter through, that our capitalistic system and that of free enterprise, cannot exist without profits.

The tremendous growth that takes place every year in the production and service facilities in this country, could not and would not take place without profits. Nobody would invest the enormous amount of money, required for such growth, in unprofitable businesses.

It is profits that make jobs. Unprofitable businesses cannot continuously employ a large number of people at the high level of wages existing today.

Under our economic system, every business that is unprofitable is a drag on the economy. Without business profits, we have depression, heavy unemployment and business failures—and certainly nobody wants that!

It is, we think, the job and duty of business to offset smear campaigns against business profits by making it clear to everyone that business profits are vital to the wellbeing of our country and its people.

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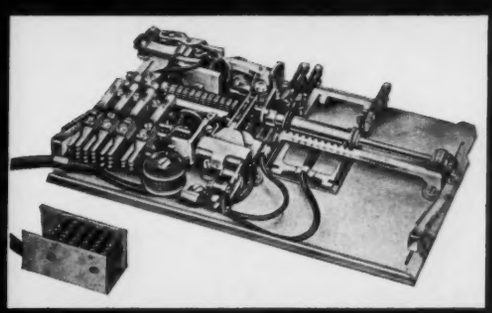
RIP VAN WINKLE · Courtesy the BETTMANN ARCHIVE

. . . it's still running, Rip!

If Rip Van Winkle had installed a Stromberg-Carlson XY Switch just before he took his twenty-year nap, it would still be running when he awoke. Continuous round-the-clock operation in our test laboratory for the equivalent of 20 years' service life shows no appreciable wear. Life tests have been continued for a period equal to 100 years' life.

Many factors contribute to this amazing stamina: All parts are case-hardened. The "Parko-Lubrite" finish *retains* oil. Dimensions of critical parts are accurately controlled. The Wiper-Bank is designed to last for the life of the switch. Isn't there a moral of dependability in all this . . . for *you?*



STROMBERG-CARLSON

Factory, General Offices: Rochester 3, New York. Branch Offices: Atlanta 3, Chicago 6, Kansas City 8, San Francisco 3. In Canada: Stromberg-Carlson Co. Ltd., Toronto

Congress clarifies OPS position on rate increases . . . WSB has trouble with congress . . . REA gets $25 million loan fund.

Washington Bureau Reports

By ROLAND DAVIES and FRED HENCK

DISCOVERING that the obvious and logical meaning of its past actions is not sufficient for ambitious government employees who want to interpret the nation's laws to suit their own ends, Congress has established what must be close to a record for clarity and positiveness in at least one section of the new Defense Production Act.

The nation's legislators, in completing action on the controls legislation, put an end to any ideas of the Office of Price Stabilization about intervening in public utility or common carrier rate case in language which cannot be misinterpreted by the most obstinate OPS lawyer.

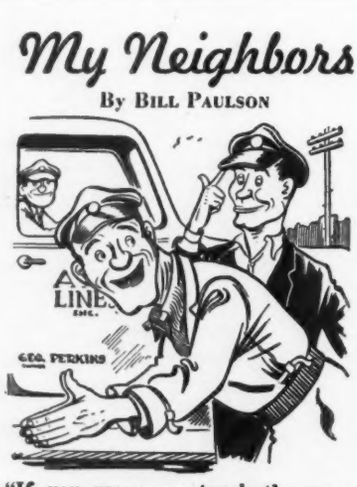
OPS, Congress said, "shall not intervene in any case involving increases in rates or charges proposed by any common carrier or other public utility" except in resale matters, which do not involve communications services. Earlier, the Senate and House Banking Committees had voiced their opinions in no uncertain terms, stating that it would be "improper" for OPS to spend money in rate case interventions, and "contrary to the intention" of Congress.

The difficulty before, of course, was that while the law provided that OPS did not have jurisdiction over utility and common carrier rates, there was no flat prohibition against the agency intervening in a case if the regulatory commission concerned was willing to have it come in. Even when it was pointed out that OPS had no authority to intervene, the answer of some staff members was that they proposed to act under the general authority of the OPS—apparently something like the "inherent" powers exercised by President Truman in the steel seizure.

At any rate, Congress reacted about the same way to the "inherent" powers of OPS that the Supreme Court majority did in ruling on the steel seizure—and with the language of the present law, buttressed by the Congressional committee reports, it does not seem possible that OPS' position, or lack of it, in utility matters is subject to any argument.

WSB Having Troubles With Congress

MEANWHILE, another federal controls agency, the Wage Stabilization Board, was having its troubles with Congress, not only in the Defense Production Act extension, but also in the final actions on appropriations.



"If you ran your truck the way bureaucrats run the government, you'd have to borrow enough to pay for your gas!"

Winding up with little more than half of the almost $16 million asked in President Truman's budget, the wage board contended that it had only two choices—"refusing to handle the 1800 voluntary petitions submitted each week for permission to make wage adjustments which cannot be made under the board's self-administering regulations; or wiping out all other activities."

WSB Vice Chairman Benjamin Aaron said that if the function of advising labor and management as to what is permissible under WSB regulations is abandoned, as well as all enforcement activities, the cost of servicing petitions still would have to be cut down upwards of $2.5 million a year. "At present," Mr. Aaron said, the board has a backlog of 13,000 petitions in the national and regional offices. We have been criticized for long delays in processing such petitions. Considerable progress has been made in speeding up case decisions. If the board has to save another $2.5 to $3.5 million, however, parties would have to wait not three months, but six, seven, and eight months for action on their petitions. The economy cannot stand such a delay."

Mr. Aaron's statement was made after the House voted a $7.5 million fund, boosted somewhat by the Senate, for his agency. However, his comments generally applied to the final bill enacted.

Under the Defense Production Act, however, the present WSB will not have to worry long about the agency's appropriations. As of July 29, WSB members must serve subject to conformation by the Senate, and the ex-

isting board in effect is abolished. Of course, President Truman can, and probably will, reappoint all of the existing board members who want to serve. One who doesn't is Chairman Nathan Feinsinger, who has said he will depart on the July 29 date. The Senate confirmation requirement is probably academic until next year, of course.

In extending the act, Congress eliminated WSB's authority to attempt to settle labor disputes—the subject of so much bitter criticism as a result of its findings in the steel case. From here on, WSB is supposed to be a wage stabilization board and that's all, although how much stabilizing has resulted or will result from its activities is open to question.

Also, the present board is prohibited from issuing any general regulations, prior to the July 29 reconstitution of the agency. This reportedly was designed mainly to halt a productivity pay ruling which had been in the works for a long time.

Under the new law, wage controls expire next April 30, and the terms of the members to be appointed by July 29 run out then, also.

About July 29, if the steel dispute is fully wound up then, may come a decision on another potential trouble source for WSB—a walkout of organized labor representatives. This probably would have come immediately had the joint House-Senate conference committee not put back into the law some of the price controls knocked out by the House.

As of the writing of this column—and nothing is more likely to be written in sand or water than a report on the status of something affecting a labor dispute—it appeared that the CIO, at least, could hardly walk out on the WSB. After all, CIO President Philip Murray, who also heads the United Steelworkers, was leading a strike against steel producers who wouldn't grant the items recommended by the WSB in its findings in the steel case. It would look silly, to put it mildly, for Mr. Murray to walk out on the board when he is attempting so strongly to put its recommendations into effect in the most important wage controversy any CIO unit has been in for a long time.

25 Million Loan Fund Granted REA for '53

FOR A SESSION of Congress which contained less of interest to the telephone industry than any in recent years, the week's events immediately before the start of the Republican national convention produced several interesting items. In addition to those previously reported, there was the action on Rural Electrification Administration appropriations taken by Congress in completing action on the Agriculture Department funds bill.

At first glance, it appears that the REA telephone program was given something of a cutback. Loan authority provided is $25 million, with a $10 million contingency fund also available. This compares with the actual experience of $41 million in loan allocations in the past fiscal year. Also, REA had very little loan authority carried over into the new year—less than half a million.

The first assumption, however, is modified by several factors. The first is that the agency received about the same total fund for its payroll and other administrative costs, including an allowance for statutory pay increases. Since REA's emphasis is shifting from electrification to telephone, that presumably means more personnel working on the telephone program in the fiscal year which just began.

Second, the requests for REA loan authority in President Truman's budget, submitted at the outset of this year, were based on the expectation that the critical materials situation would get worse than it was, and that loan allocations would be valueless because the equipment couldn't be bought.

Third, the House Appropriations Committee said in its report that past history indicates that REA can come back in for additional loan authority if it needs it in full optimism that the money will be made available. That may well apply even with a change in national administration, as most Congressmen in both parties like to be able to call themselves the farmer's friends, and that means either lining up on REA's side or at least not opposing it. Over the years, REA receives less Congressional criticism from either side of the aisle than any government department or bureau of any consequence.

Day & Roys Advance To New Control Posts

PROMOTED to what is regarded as one of the most responsible and difficult positions in the federal government's program of controlling the use and supply of strategic materials, William M. Day, who has been Director of the National Production Authority's Communications Equipment since March, has begun

(*Please turn to page* 50)

ENOUGH TO GO AROUND?

"Every day you have the opportunity to make telephone users happy."

Public Relations
You and Your Subscribers

"In Selling something as intangible as service it is imperative that you make the subscriber believe that no one can furnish better service than you do . . . Basically, Public relations in the telephone industry is just that . . ."

By ROBERT P. HANSEN

"PUBLIC RELATIONS." This is a term widely used and misused today. A simple definition of the term *Public Relations* would be "How can I make everybody like me and therefore buy more of my product?" You will find many better definitions, but boiled down to common, every day language that is the result we are all striving for.

Telephone companies are in business to sell one thing and one thing only. *Service.* Public Relations between the telephone company and the telephone user is therefore *very important.* If I make a better mouse trap, then the world will beat a path to my door step; but in selling something as intangible as *Service,* then it is imperative that I make my subscriber believe that *no one* can furnish better *Service* than *I do.* Public Relations in the telephone industry is basically, just that. You are probably asking yourselves, "Well, what more can I do than I already am?" You may possibly get an idea from one of the following:

(1) *Do you keep me (your telephone subscriber) informed on telephone problems of the day through the media of newspaper advertising?*

In a town the size of Princeton, everybody reads the newspaper. Yes, even the advertisements. It doesn't take long to read the news contained in the four pages, so even the advertisements are given a thorough treatment. I believe the Bell System is a good example of how this job can best be done. I know we have all read their ads and thought how well they express our problems.

(2) *Do you come to my Rotary, Kiwanis, Lions Club, Chamber Of Commerce, or Business Mens' Club and give me an insight on some of your troubles, hopes, and plans?*

This is a good idea no matter how large or small your town. Every one is interested in the telephone company. You can keep me a lot happier if I know why I can't make that long distance call faster, or that in six months the operator in my small town will be able to dial my number in hundreds of cities across the country with the aid of Inter-Toll Dialing; or the reason I haven't been able to ring Aunt Jenny is because in that last sleet storm a tree fell across the lines down on the Hopkins Place, and the boys are putting in a new line to replace it.

"Be a Speaker"

Through your local clubs you are able to show me (The Telephone User) why I have to pay more for my service than I did a few years ago. Tell me that a great part of the increase is due to the tremendous increase in government taxes; and the remainder because of higher operating costs. Don't allow me to believe any longer that you big utilities, *with your monopoly,* are just sticking that money down in the sock, and paying huge dividends out of this huge surplus. Get up on your feet, and tell me the pinch the telephone companies are really in. Show me (Your Neighbor) why it is so important that you telephone companies must be kept in good financial shape so that you may *serve me better.* The next time you see the program chairman of your civic club; ask him to put you on the program. You will be surprised at the friendly reception you will receive, and the good will you will earn for your company.

(3) *Do you go to your son's or daughter's class room in High School or before an assembly of the science students and explain the fascinating facts of the telephone industry?*

Incidentally, if you can show some of these high school boys and girls how interesting the telephone business is, then you have tapped a good source in the labor market. You will also reach Mom and Dad, because Junior will certainly go home and tell them everything you said to

"Telephone companies are in business to sell one thing only—and that is service."

"NOTHING impresses the public like good looking equipment with neat, courteous employees. Neat and courteous employees very often go with well-kept equipment—and very seldom do you find them in dirty trucks . . ."

"Public Relations isn't doing one great big job well. It's a matter of strict attention to a lot of small jobs . . ."

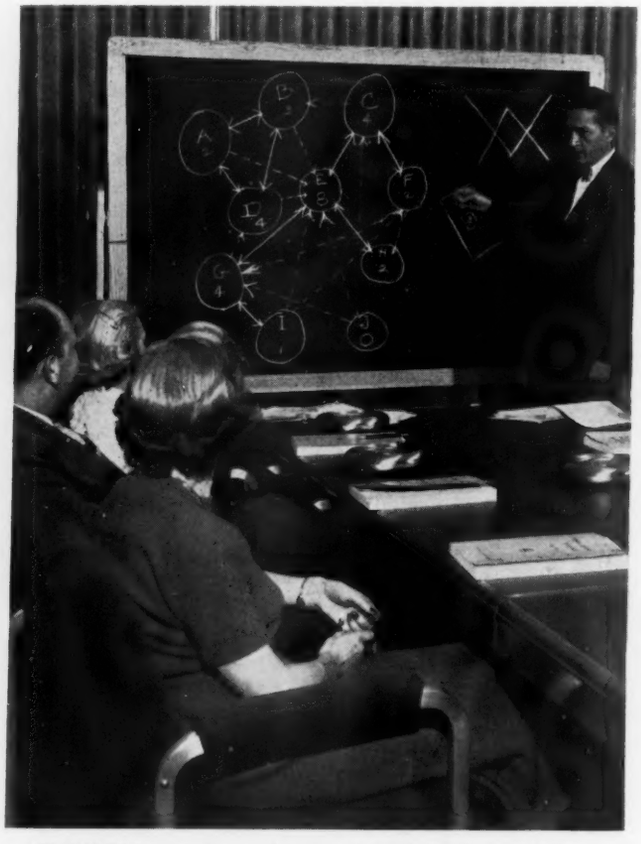
the class. The teachers will appreciate your help because an outside speaker will aid them in demonstrating how their knowledge may be used after graduation. If your exchange hasn't had an Open House for quite some time, why don't you invite the students and their parents for a first hand look at just what goes on when they make that telephone call?

"Invite Subscribers In"

Speaking of Open Houses; the Princeton Telephone Company celebrated its 50th year of service last December. We conducted tours of the five principal exchanges of our company with excellent results. In the Princeton office we demonstrated dial equipment, and then conducted our guests through the entire exchange. We felt the Open House was a real success both from the view of the subscriber as well as from our employees standpoint. It was a real morale boost for our operators to have their friends come through and see just what they were doing.

From the company's standpoint we were proud to

"A SMILE is worth $10,000 in advertising . . . A friendly smile and courteous ways just naturally go together."



"TALK TO members of your civic club. You will be surprised at the friendly reception.

"Get up on your feet and tell your subscribers the pinch the average telephone company is really in . . ."

have the public see what a fine job our operators were doing. Along with our Open House we had our Golden Anniversary Banquet. As our guests we had representatives of the principal industries served by our system; telephone suppliers; guests from connecting companys; town officials of the several cities we serve; and many old and valued friends of the company. At this Banquet we awarded Service Pins to many of our employees for long years of faithful and meritorious service. One of our employees had been with us for 35 years; two for 30 years; several for 25 years, and many for 20 years. Good times and bad had been their lot; and the company felt that in this small way we could show our sincere appreciation.

(4) *Do your employees meet me with a smile when I come to pay my bill, request a change in service or report trouble?*

It's just as important for the employee to smile when talking over the phone as when meeting the public face to face. Nothing can make a person more angry than to have a pet peeve and then run into a telephone employee with a grouch. A smile is worth ten thousand dollars in advertising. I have yet to see a person with a million dollar smile that doesn't have a million courteous things to say. I'm sure I don't know who said it but, "*A smile turneth away the wrath, forever*". This point can not be stressed too heavily in employee training.

(5) *Do you keep your company trucks clean, well painted, and in good repair?*

Nothing impresses the public like good looking equipment with neat, courteous employees. Neat and courteous employees very often go with well kept equipment; and very seldom do you find them in dirty trucks. Nothing can start suspicion of the type of service faster than dirty trucks, in bad repair, with discourteous men attending them. It's the mark of a good company to keep this thought in mind at all times. When You Have Construction In Progress That May Interfere With Traffic; Put Up Signs Apologizing For The Obstruction And Tell Them you Are Improving The Service. Nobody will complain when they know they are going to get something better.

"A Good Public Relations Job"

Which reminds me of a wonderful Public Relations job done by a trouble-shooter in our own company. This happened a number of years ago when radio was first becoming quite popular.

A certain rather elderly lady was having a great deal of trouble with her telephone. Jim, the trouble-shooter, made trip after trip to her home to try to get the trouble straightened out. She came up with all kinds of suggestions to help the situation. Jim checked everything. He checked the cable. He checked the drop wire connections. In fact, before he was through he said he had even checked the foundation of the house. As a last resort he took a new instrument to her house. Just as he was about to leave after even this had failed; she asked him, "Do you think one of the tubes is burned out?" "Tubes?" Jim said, "Hmmmm. I'll go right back to the office and check them." Well, Jim went right back to the office and immediately called the lady. He asked her if she could hear him all right. She told him he seemed to be plainer than before. He then said, "Miss Jones, I found out that you were right. One of the tubes was burned out and I replaced it. Can you hear me better?" "Oh yes", she said. "I can hear you real plain". Well, you know we never had any more trouble complaints from her and she was a satisfied telephone user for the rest of her days.

Public Relations isn't doing one great big job well. Its a matter of strict attention to a lot of small jobs in a courteous friendly manner. *No one person* can handle Public Relations in the telephone company. *Every one* in a company the size of ours is in constant contact with the public. Every day *YOU* have the opportunity to make friends and happy telephone users through *GOOD PUBLIC RELATIONS.*—THE END

"IF YOUR company hasn't had an Open House for quite some time, invite folks in for a first hand look at what goes on . . . It will help you gain many new friends and demonstrate to the public some of the jobs necessary to provide good telephone service . . ."

"Whether your company survives . . . depends largely on how accurately you estimate the expected life of the physical property."

FUNDS expended must be properly accounted for depending on whether they involve operating expense, investment in new plant, or removal of old plant.

Small Company Accounting

By LAMAR S. STOOPS

WEBSTER says accounting is, "the act of reckoning or adjusting accounts." To reckon, he says is, "to compute; to calculate". Further, Webster says, to adjust is, "to put in order, or reduce to a system". . . . So I reckon we had better calculate on reducing our accounting to a system. But what system? Well, our search for a system is simple, because our Public Service Commission prescribes the system.

At this point I'd like to call attention to the fact that accounting is not an exact science. On the other hand, bookkeeping, which is the mechanics of accounting, is an exact science. That is, the bookkeeper's accounts must be in exact balance, mathematically speaking, but that does not necessarily mean the bookkeeper's records reflect the true condition of the company's financial health. In other words, funds expended must be properly accounted for depending on whether they involve operating expense, investment in new plant, removal of old plant and so on.

Accounting practices must reflect past and present financial conditions. In addition, the system used must reflect management's best guess as to the life expectancy of the physical plant. So accounting is a case of where have we been, where are we now, and where are we going? Estimating the life expectancy of the plant is the $64.00 problem and even the experts cannot always agree, so don't expect me to supply a formula acceptable to both regulatory bodies and management.

Why is it so important to estimate expected life of the physical property? Simple enough, whether or not your company survives as a healthy enterprise, or survives at all for that matter, depends largely on how accurately you project this all important life expectancy.

You see it is intended that the original cost of plant shall be spread over its expected useful life. Furthermore, it was originally intended and expected that you would charge for the use of the plant, through its useful life, a sum sufficient to replace the worn out plant upon its retirement from service, but even more about that later.

For example, under the prescribed system of accounts, if the plant is expected to last 20 years, we would be required to charge off 5% of the invested value per year, and this item of charge is called depreciation expense, or we would call it plant replacement, or plant use expense. In any event it is one of the operating expenses and a major one at that. Now if the plant lasts only 10 years instead of the anticipated 20 years, we will have only charged half enough for the use of the plant. Therefore we will have unwittingly been cheating ourselves by charging too little expense and suddenly realize that what we thought was a profit just simply did not exist at all.

To add insult to injury we will have

paid taxes on a book profit which did not in fact exist. Goodness knows, paying taxes on a bona fide earning is painful enough! Of course if you are operating a strictly cooperative company and enjoy tax exemption privileges you'll not be concerned. Looking at it from another angle, if the plant was expected to have a useful life of 20 years and lasts only 10, we will discover to our ultimate sorrow that at the end of the 10 years we may not be in financial condition, either cashwise or creditwise, to replace the now useless property.

Well, I'm getting into a deep subject when I discuss depreciation, or plant replacement expense. Many books have been written on the subject and the space allotted for this discussion of accounting wouldn't permit me to scratch the surface of this all important phase of accounting. Fact is I'm probably in over my head now so I'll proceed along more general lines.

To expedite matters I have prepared a few cards which represent Balance Sheets reflecting the operation of a hypothetical telephone company established 20 years ago. —We will assume you had a rich uncle die and leave you $100,000. (after taxes). Since there is no place like a telephone company to put your money for safe keeping (you can't even get it out yourself) you decided to venture into the telephone business. So here we go.

For simplicity I'll deal in round numbers, and let me remind you that any figures used are purely ficticious and bear no relationship to any existing company (living or dead). My figures are used to demonstrate a principle and in no way are intended to reflect actual operating statistics, composite or otherwise.

All right, as of Jan. 1, 1932 you formed a corporation to buy a telephone exchange. You are lucky, a brand new 1,000 station exchange has just been built and ready to cut into service. Just before you made your purchase your balance sheet would look like this:

JAN. 1, 1932

ASSETS:—	Cash	$100,000.
	Total Assets	$100,000.
LIABILITIES:—	Capital Stock	$100,000.
	Total Liabilities	$100,000.

You don't realize it now but that is the best looking balance sheet you'll probably ever have, but you are ambitious so we'll proceed to "mutilate it".

Now you have purchased the brand new exchange and your balance sheet will look like this:

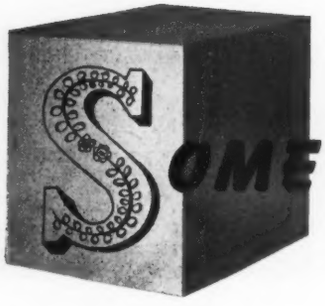
JAN. 1, 1932
ONE HOUR LATER

Plant Investment	$100,000.	Capital Stock	$100,000.
Total Assets	$100,000.	Total Liabilities	$100,000.

Well, that's still a pretty good looking balance sheet except that you are "broke" already, because you spent all of your money for the exchange. However, there are brighter days ahead because you'll soon have an income.

(*Please turn to page 72*)

"IT WAS originally intended that you charge for the use of the plant, through its useful life, a sum sufficient to replace worn-out plant upon its retirement from service."



SOME DIAL SWITCHBOARDS JUST

It's a sorry situation when a telephone company invests its hard earned money in a dial switchboard and finds that it is necessary to discard that switchboard because the exchange has grown beyond its capacity.

Yet we've seen it happen many times. In fact we've sold Leich Dial Systems to a number of companies who had to buy a new dial switchboard because their old one could not be expanded.

This mighty important expansion possibility is one of the basic features of the Leich Dial System. Additional lines and links can be quickly and inexpensively jacked-in up to the capacity of the board. Should even more switchboard capacity be required, additional 100 line switchboard bays can be added.

In this way, the original investment in a Leich Dial System is always good. The telephone company never needs to worry about outgrowing the original equipment.

Telephone companies that have really had the experience — that have had to discard good, serviceable equipment because it could not be expanded, will tell you how important that is.

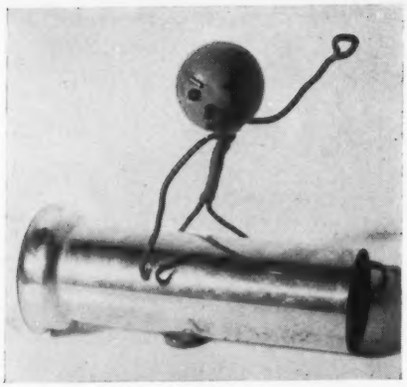
The Leich Dial System can always be expanded. It's a safe investment. Leich Sales Corporation, 427 W. Randolph St., Chicago 6, Illinois.

LEICH MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

Trash harbors rats and mice. A continuing battle with the trash piles is necessary.

Wearing safety goggles may be a nuisance—but so is going through life minus an eye.

Loose trash on the floors invites slips and falls. Sweep it up—hourly if necessary.



Bumping into equipment and heavy objects may provoke a laugh from onlookers—it can also provoke serious injuries.

Safety Hazards Cost You Money

By DAVID MARKSTEIN

Safety engineers know that recurring "small" accidents take more hours and cause more grief than the less frequent "big" accidents.

ACCIDENTS are as much a business operating factor as cost-of-supplies, and most telephone companies have a systematized program for preventing them. However, we have noticed that some managers do not regard minor, everyday accidents as a serious matter. Safety engineers, however, mark "serious" any sort of mishap which occurs frequently. They know that recurring "small" accidents take more hours and cause more grief than the less frequent "big" accidents.

The first step in an effective safety program is organization, and the first part of this is to find what causes accidents. Falls are the most common and generally result from poor lighting, slippery floors, poor methods of carrying stock, faulty hand rails, differences in floor levels, worn or torn floor covering, loose wires and appliances, trash on the floors, and unstable ladders. Cuts due to broken glass, loose nails, jutting machinery or appliances are also common.

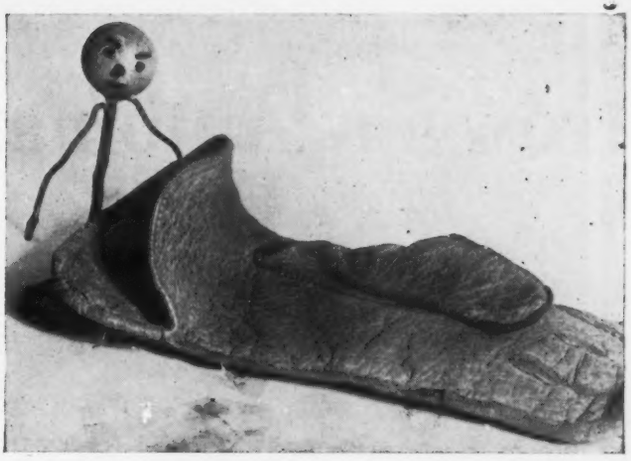
Lastly, inattention or plain carelessness is a big cause of accidents. *You can definitely do something about this human factor.*

These are the most frequent causes of accidents according to insurance company records. Many phone companies guard well against some of the causes; few guard efficiently against all of them. There may, moreover, be other causes.

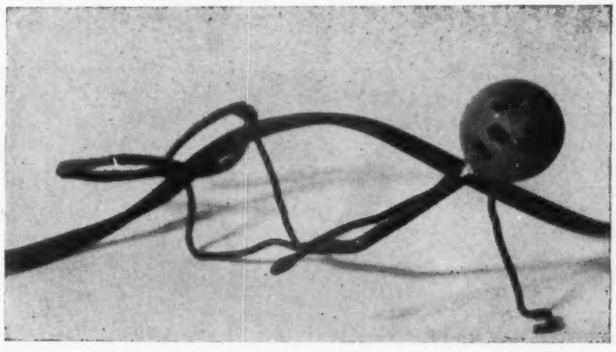
Accident Records Should be Kept. Safety engineers recommend that a complete record be kept of all accidents on a form that includes the time of day, weather conditions, whether it was necessary for the injured to stop work—and for how long—the apparent cause, the injured's story, the spot at which the accident occurred, work the injured person was doing at the time, whether an installation was defective, and reports of witnesses.

From the standpoint of "past history" it is important because some people come back with a legal action long after the accident occurred. The Metropolitan Insurance Company, in a booklet, "Getting Facts About Accidents," suggests that these forms be kept over a long-term period. By

Loose electrical connections in your offices and storerooms can spark expensive fires.



Broken glass can cause wounds that fester, sometimes become serious. Get it up fast, and use heavy gloves.



Loose wires and shuffling feet are like powder keg and spark. Tack them around walls, don't let them string across rooms.

comparing them and carefully checking each accident, it is possible to learn the commonest kinds of accidents and, armed with the knowledge, to do something about them.

Most accidents are classed as falls. Here are fall-prevention recommendations made by safety experts:

(1) Before applying new wax, remove old wax from passageways, stair landings, steps, and every place a fall might occur. Waxed-over floors are dangerous. Non-slip wax should be used.

(2) Step-ups and step-downs should be clearly marked. Spots where the floor level changes, even if they are ramped and not stepped, cause accidents. Insurance companies recommend special paint markings and even special lighting where necessary.

(3) Faulty handrails cause deaths and permanent injuries. Rails and guards should be inspected regularly and repaired immediately when found unsafe.

(4) Worn or torn flooring and floor covering are an invitation to trip. They should be replaced or repaired without delay.

(5) Loose wires should be fastened along the wall or in such a way that they will not be accident hazards.

(6) Racks, bins or desks should not be located too near stairways.

(7) Unstable ladders should be guarded against. When a ladder is in place, there should be markers to warn passerby. The ladder itself should be safe.

(8) The place should be swept regularly; trash causes clips.

Cuts, sprains and bruises also waste man hours and money. How should the telephone company's safety engineer avoid these pitfalls? Safety experts recommend, first, that stockrooms be doubleguarded if they contain glass merchandise or glass containers. Breakable objects should be kept safely in excelsior until used. Broken glassware should be disposed of immediately.

Improper lifting methods can cause painful, sometimes permanent injuries. Experts advise using powerful thigh muscles to provide the power.

Miscellaneous things-to-watch-for include: faulty electric fixtures which might start fires or cause shocks to personnel; loose nails and splinters sticking from tables and counters which can rip clothing and skin, sometimes causing blood poisoning; fire hazards of all kinds—from loose excelsior on a stockroom table to strike-anywhere matches.

The best safety procedure is to appoint a particular employee to head the accident prevention program. This is not necessarily a full-time job, but the safety manager should have charge, first, of cleaning up physical safety hazards; second, of providing training to fight the human-mistake variety of accident. For this training program, the manager should chart the mistakes which might be made and present them at regular meetings of all employees. These meetings should be supplemented by regular bulletins and posters.

Excellent safety posters can be had without charge from the National Safety Council, Inc., and from the offices of many insurance companies. It is a good idea to change the posters frequently for posters displayed over a long period of time lose their effectiveness.

Implementing an effective accident-prevention program is not a one-time job. It calls for continuous work, week in and week out. If, on the surface, it seems to be costing money, the results are worth it. A few dollars a week are nothing compared to the lawyer's fees incurred by one accident that could have been prevented. —THE END.

Strowger Automatic *Flexibility*

meets Herculaneum's "Over

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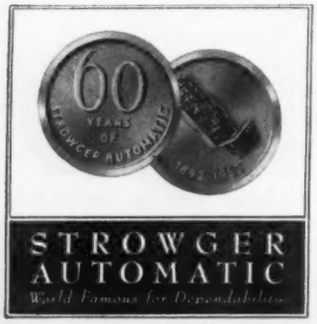

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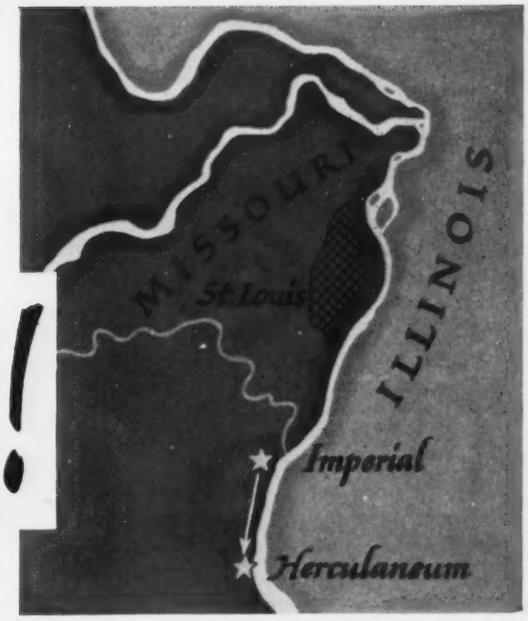
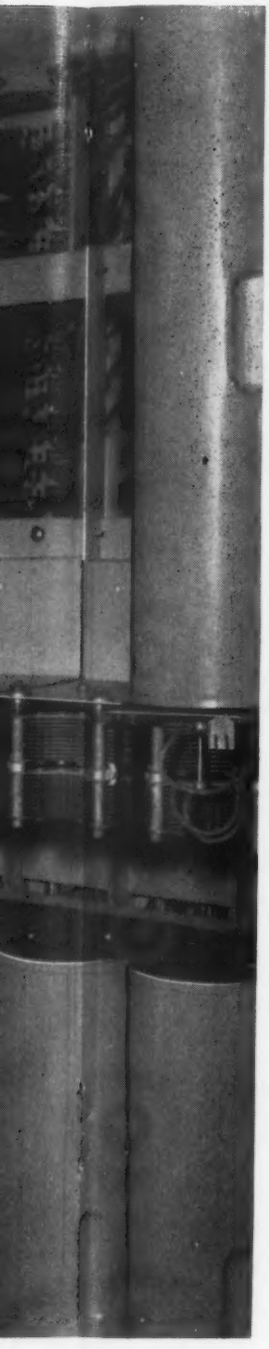
Overnight" growth

Overnight!





Mr. John Nipper, wire chief of the Herculaneum, Missouri, exchange of the Ozark Central Telephone Company, shows how the Herculaneum traffic emergency was quickly and easily handled.

• Rapid growth and changing traffic
make you really appreciate Strowger Automatic!—
for *nothing equals the flexibility of the Strowger switch.*

Herculaneum, Missouri, illustrates
how Strowger flexibility can save you headaches.
Skyrocketing traffic hit this exchange with stunning impact
when a local plant suddenly mushroomed in size to meet defense needs.
The Ozark Central Telephone Company
provided the needed facilities, however,
by moving switches temporarily from Imperial
—all in a matter of hours!

Why are Strowger switches so flexible?
Each switch is a unit—*a switchboard in miniature!*
Quickly, economically, you meet every need
by merely lifting these light, compact units from shelf to shelf,
from exchange to exchange.
There's no mechanical connection between switches,
no critical alignment on the shelves.
Switches you do not move continue to operate as usual.

The flexibility—and dependability—of Strowger Automatic
have been proved for 60 years.
Write for the full, time-saving story today!

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
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Washington Bureau Reports

(*Continued from page 37*)

his new duties as Assistant NPA Administrator in charge of the Metals and Minerals Bureau.

Mr. Day's appointment was regarded widely as a tribute to his success in the CED assignment. His new position is considered an NPA "hot spot," in view of the steel strike, potential copper difficulties, and other problems in obtaining basic materials supplies and channeling them to mills, fabricators, and similar processors. In his new post, he reports directly to DPA-NPA Administrator Henry H. Fowler.

Everett C. Roys, Vice President of the Pennsylvania Telephone Corp. on leave, who has been Deputy Director of the Division, and will continue in that capacity until his six-month tour with the defense agency expires in October. It is expected that the new Director will arrive in mid-September and work with Mr. Roys for several weeks under the usual CED procedure. The new Deputy Director, from the Independent branch of the telephone industry, probably will arrive about the same time.

Howard Fine Named V. P. of Neale & Telephone Power

HOWARD B. FINE, former owner of the Groton-Ferney Mutual Telephone Co., Groton, S. D., has been elected vice president of Neale Construction Co., Inc. and Telephone & Power Supply Co., Topeka, Kans.

Before purchasing the Groton-Ferney company, Mr. Fine was general manager of Minnesota Community Telephone Co., Waterville, Minn. He started his telephone career in January, 1937, as private secretary to Ralph Van Trine, who was president of Telephone Management Co. which operated in an advisory capacity to a group of 36 telephone companies known as the Gary Group. During his employment with that company his work was of a diversified nature involving managerial, operating, traffic, commercial, plant, engineering and accounting.

Howard B. Fine, vice president of Neale Construction Co. and Telephone Power & Supply Co.

In July, 1940, Mr. Fine was transferred to Durham, N. C., with Mr. Van Trine and remained there as secretary until January, 1942, when he was advanced to the position of commercial superintendent.

In January, 1945, Mr. Fine was promoted to the position of general manager of the Minnesota Community Telephone Co., Waterville, Minn. He resigned this post in January, 1950, to purchase the controlling interest in the Groton Ferney Mutual Telephone Co.

IT MAKES SENSE!

Hawley, Minn., Company To Quit Business:

THE ROLLAG Telephone Co., Hawley, Minn., is conducting a drive to get persons in its area to subscribe to the Barnesville Rural Telephone Co.

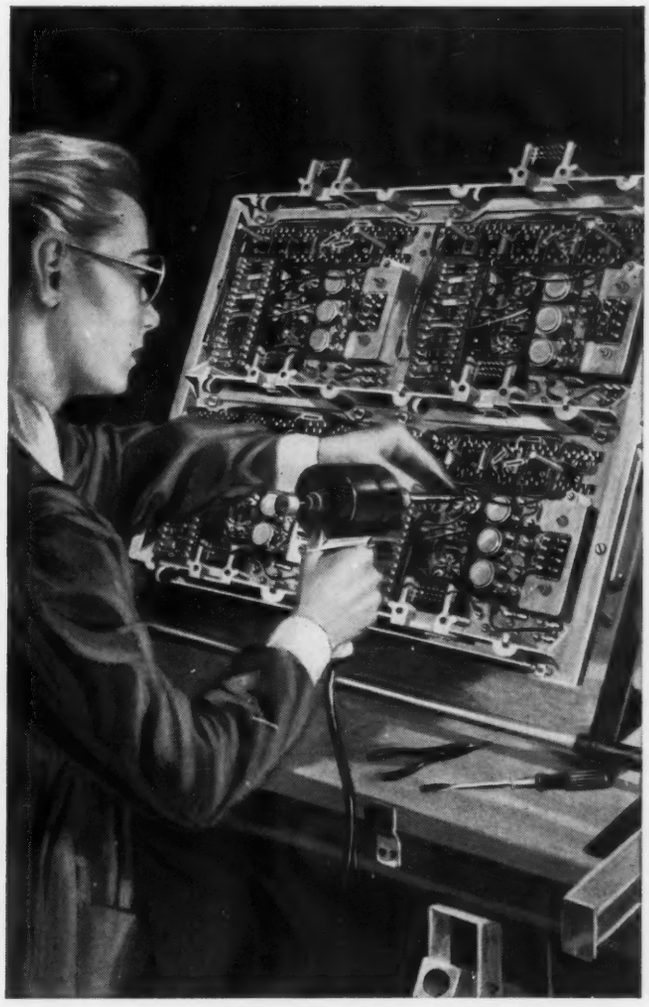
The Rollag company is in receivership with Carl Hillestead, Hawley, as receiver. The firm plans to sell out to the Barnesville concern.

Hillestead said the company must liquidate its stock because rates are too low and sufficient funds are not available for maintenance.

The company, organized in 1904, once covered an area from Barnesville to Cormorant and Hitterdal. It was organized in 1934 and in 1941 Harry Gerner of Hitterdal bought the lines in the Hitterdal area.

At present the Rollag company has 214 subscribers. On the board of directors are Andrew Anderson, Artie Brunsvold and Carl Hillestead, all Hawley, and Hartvig Nelson, Barnesville.

"Look-alikes?"



...yes, but one directs guns, the other directs telephone calls!

Each of these units of electronic equipment is important to national defense in its own way. Together they symbolize the double-barrelled defense job being done by Western Electric.

With the help of thousands of sub-contractors, large and small – located in all parts of the country – we're turning out special military communications and electronic equipment for the Armed Forces. For example: a radar fire control system for anti-aircraft guns, a part of which is seen in the left-hand picture.

Naturally, we're also busy on our regular job of making telephone equipment – such as the dial switching unit at the right – to help keep the telephone network going and growing in the nation's service.

Western Electric

TELEPHONE APPARATUS AND CABLE

Texas Independents Form New Company

ORGANIZATION of the North Central Texas Telephone Corporation exchanges in a four-county area, was completed at a recent meeting at Denton, Tex.

Officers of the new organization are: Earl Nunneley, Decatur, president; R. E. Solomon, Valley View and C. P. Owens. Rhome, vice presidents; and Jack Harmonson, Justin, secretary.

Directors chosen were L. R. Gross, Lake Dallas; Clarence Spradley, Haslet; Charles Smith, Alvord; and R. H. Torrence, Boyd.

Nunneley said the companies need approximately $3,000,000. "With this we can install dial telephones immediately," he said. "Extending rural lines and other related work will take about three years. By forming a central group we can avoid government control."

Present at the meeting were Charles Smith, Alvord Telephone Co.; C. P. Owens, Rhome Telephone Co.; Clarence Spradley, Haslet Telephone Co.; Jack Harmonson, Justin Telephone Co.; R. E. Solomon, Valley View Telephone Co.; J. B. Haley, Texas Telephone Association; Ira Fullerton and Sam H. Shutt, Texas Telephone Co.; H. L. Housley, Automatic Electric Co., Dallas; and Mr. Nunneley.

INCORPORATIONS:

GOODLAND, KANS.:—Incorporation proceedings have been completed by the S & T Telephone Cooperative Association. The cooperative was formed last year to provide improved telephone service to rural areas in Sherman, Thomas, Wallace, and Logan counties. Incorporators include residents of Goodland, Colby, Kanorado, Brewster, Levant, Ruleton and Winona. Elmer E. Euwer is resident agent of the cooperative which has an authorized capitalization of $100,000. A loan to provide construction of the new system is pending with the REA in Washington.

ROBINSON, KANS.:—Members of the Rainbow Telephone Cooperative Assoc., Inc., Robinson, met in Horton recently to elect permanent officers to replace temporary committees and organize as a corporation. Officers are Emmett Oltjen, Robinson, president; James Swartz, Everest, vice president; Melvin Kleppe, Leona, secretary; and Thomas Tollefson, Willis, treasurer. Geo. Olson, Everest; Joseph Nelson, Horton; and Lawrence Meidinger, Leona, are delegates at large.

BRECKENRIDGE, MO.:—In order to incorporate in the state of Missouri, the Farmers Mutual Telephone Cooperative has changed its name to " Green Hills Telephone Corp."

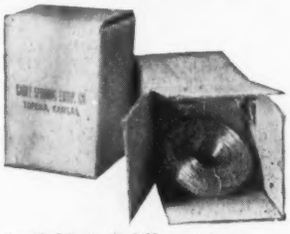
Newly elected officers of the corporation are: Charles Weldon, president, Lock Springs; John Patrick, vice president, Breckenridge; Miller Van Trump, secretary, Elmira; and Fred Williams, treasurer, Jameson. Board members are: Roy Dreves, Richmond; Charles M. Renfro, Richmond; Nevin Cox, Rayville; C. A. Earl, Breckenridge; and Kenneth Tomlinson, Jamesport.

BROOKINGS, S. D.:—Corporate papers have been filed with the Secretary of State by the Brookings County Telephone Cooperative Association. The company expects to operate 250 miles of lines and will connect Brookings, Aurora, Elkton, Bushnell, White, Bruce, Sinai and Volga. Capital was placed at $25,000,000 Directors are Ray Barnett, M. E. Erickson, William Hagensick, Erwin Tofte, Wilmer Davis and Jerry Jefferies of Brookings; Henry Bullis and Kennis Wheeler of Aurora; and Clarence Ness of Bruce.

Put the "B" on Your Problems

The Neale Model B is designed for one-man operation. It may be used with equal effectiveness for spinning new cable or maintenance spinning of existing cable. This machine is easy to transfer at pole . . . simply by removing the gate in the spinner head. Many telephone companies . . . large and small . . . have reported success in using this cable spinner to reduce outside plant costs and solve problems of new construction and maintenance.

For Best Results Use Neale Wire



Available in 7 different types . . . all made to meet the toughest construction and corrosion problems.

Contact Your Jobber

THE WORLD IS SPINNING—TOO! PHONE 2 7234 S

Cable Spinning Equipment Co.

3100 TOPEKA AVE. TOPEKA, KANSAS

By JOHN S. REED

MODERN Central Office MAINTENANCE Practices

Section X-D of Mr. Reed's article continues a discussion of various types of ringing equipment, including rotary pole changers, vibrating pole changers, alternating current converters, tuned reed converters and static converters.

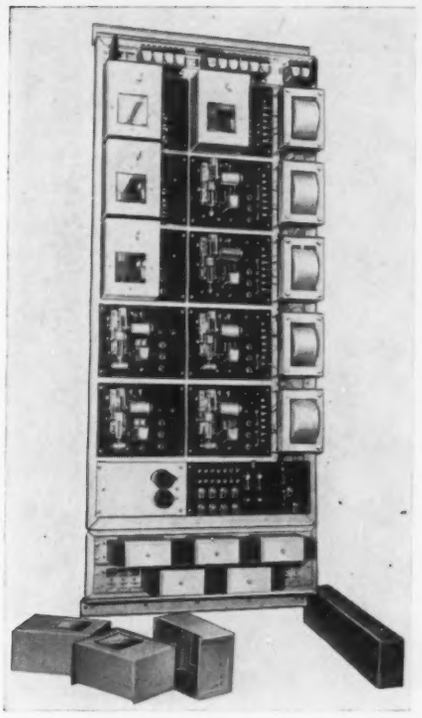


Fig. 151—Leich Multi-frequency Converter with twin sets of vibrators.

THIS TROUBLE was overcome to some extent by varying the impedance of each frequency group of tuned bells and the output voltages of the ringing generators. For example, the 16 2/3 cycle generator might have the lowest output at 105 volts; while the 66 2/3 cycle generator might have the highest output at 155 volts. The 16 2/3 cycle tuned bell would have the lowest impedance and the 66 2/3 cycle bell the highest.

After ringing sets using vibrating pole changer units were developed, the ringing frequencies were changed to a non-multiple series to minimize the cross ringing problem. Motor driven ringing sets are now available that produce standard synchromonic frequencies rather than harmonic frequencies.

Lorain Sub-Cycle Decimonic Ringing Converter

THE LORAIN multifrequency Sub-Cycle ringing converter illustrated in *Figures* 154 *to* 156 is designed to supply dependable ringing power for decimonic ringing systems. The decimonic system obtains its name from the 10-cycle spacing between the ringing frequencies, which are 20, 30, 40, 50 and 60 cycles. This type of converter has the advantages of minimum cross ringing and freedom from frequency drift. It operates from the 60-cycle power line, consuming but little power. It has no moving parts, requires no maintenance, and supplies dependable, regulated voltages. The ringing frequencies are positively locked with the 60-cycle supply frequency, so that the bells when once set to the proper frequency, are always operated at their peak efficiency.

The converter changes the 60-cycle input frequency to five ringing frequencies in several stages as indicated in the block diagram in *Figure* 157.

The 20-cycle and 30-cycle ringing voltages come from self-starting frequency dividers operating directly from the 60-cycle power input. The 60-cycle ringing voltage is obtained from a voltage regulator which also is connected directly to the 60-cycle input. The 40-cycle ringing voltage comes from a frequency doubler which is energized from the 20-cycle generator, and the 50-cycle ringing voltage from a generator which operates from both the 20-cycle and 30-cycle frequencies, combining them to produce 50 cycles.

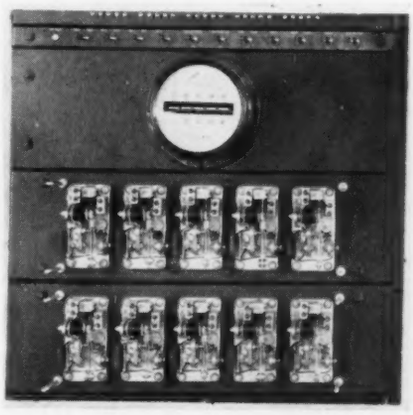


Fig. 152—Automatic Electric synchromonic ringing converter sets. Note use of Frahm frequency meter for checking converter outputs.

The frequencies are absolutely fixed, since the frequency dividers (20- and 30-cycle generators) are locked to the 60-cycle supply frequency and can operate only on fixed ratios between their input and output frequencies. The 50-cycle generator can supply only the sum of the 20- and 30-cycle frequencies. Likewise, the 40-cycle frequency, being obtained directly from the 20-cycle generator, cannot shift in frequency because the 20-cycle output is locked to the 40-cycle supply frequency.

Because each of the output frequencies is positively locked in a fixed ratio to the 60-cycle power frequency, there is no adjustment that can be made which will change the ringing frequencies. As long as ringing voltage is available, the frequency will be a fixed ratio of the 60-cycle input frequency. A power frequency supply capable of satisfactorily operating a synchronous electric clock will be found satisfactory for operating the converter. For example, should a momentary deviation in the 60-cycle frequency be as great as ½ cycle, the deviation in the 20-cycle frequency would be only 1/6 of a cycle which would not cause ringing difficulty.

Because of the freedom from frequency drift it is possible to operate

Fig. 154—Lorain Model K-5-19 multi-frequency Sub-Cycle ringing converter for decimonic ringing systems.

NOTICE

We have received a few requests for publication of Mr. Reed's article on "Modern Central Office Maintenance" in book form. Would you like to have the articles reprinted as a complete book? If enough readers are interested we may get the project started.

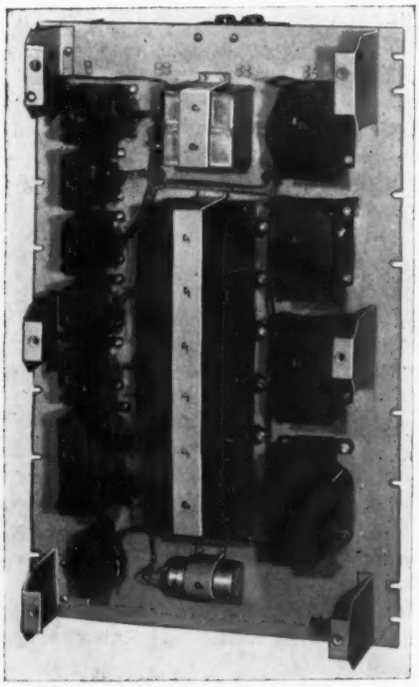


Fig. 155—The Model K-5-19 Sub-Cycle with front cover removed.

all bells at their maximum efficiency. This eliminates the need for moving the bells closer together or otherwise adjusting the ringers in a manner which would tend to increase the probability of cross ringing. If a bell fails to ring, the trouble is in the bell or in the circuit to the bell rather than in the converter.

Cross ringing in the decimonic ringing system powered by the Model K-5 converter is minimized by eliminating harmonics from the ringing outputs and by stepping the voltage of each frequency output in the following manner:

20 cycle	110 volts
30 cycle	120 "
40 cycle	130 "
50 cycle	140 "
60 cycle	155 "

An analysis of the cross ringing problem indicates the possibility of cross ringing on the 40- and 60-cycle outputs with respect to the 20-cycle output. If the 20-cycle ringing voltage contained an even harmonic, the even harmonic might cause the 40-cycle bell to cross ring. Likewise, an odd harmonic in the 20-cycle wave could adversely influence the 60-cycle bells. An even harmonic in the 30-cycle ringing voltage could cause interference with the 60-cycle bell. These factors have been taken into account in the design of the Model K-5 Sub Cycle multi-frequency converter so that the output voltages have smooth wave shapes, free from harmful high peaks or undesirable harmonics which might produce cross ringing or introduce noise into the telephone circuits. The smooth wave shapes and regulated voltages are permanently maintained and do not depend upon the age of the machine or adjustment by the user. Therefore, the converter may be expected to be free from cross ringing troubles during its entire life.

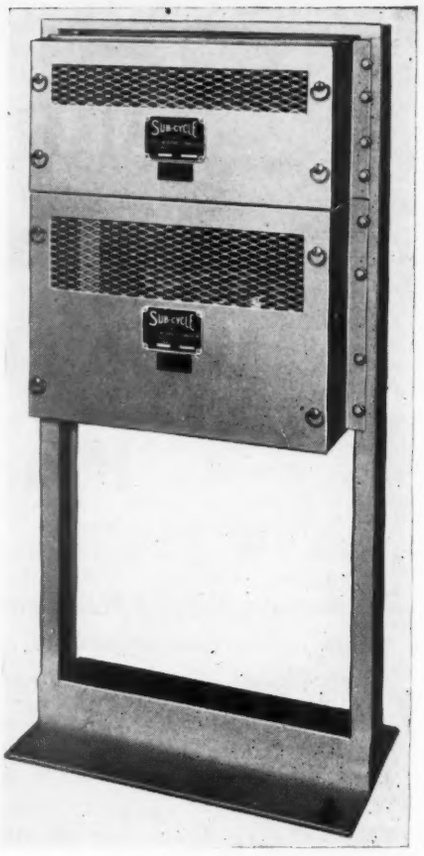


Fig. 156—Lorain Model K-5-23 Multi-frequency ringing converter in short relay rack.

The voltage regulation of the power supply plays an important part in eliminating the possibility of the cross ringing in multi-frequency ringing circuits. In any multi-frequency ringing system, a high no-load ring-

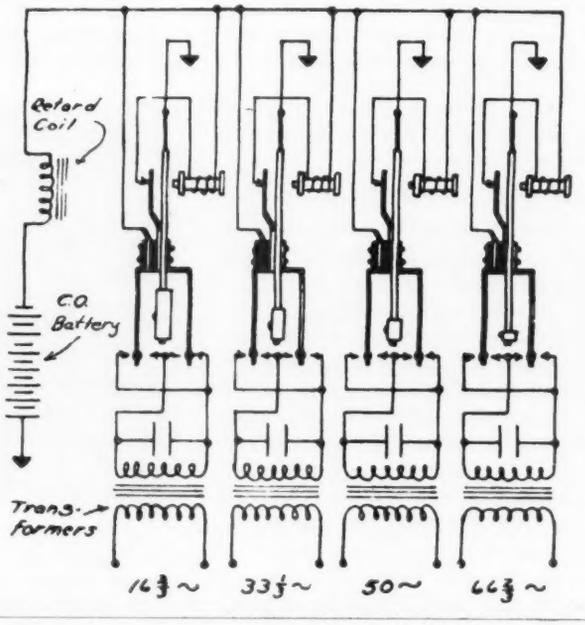
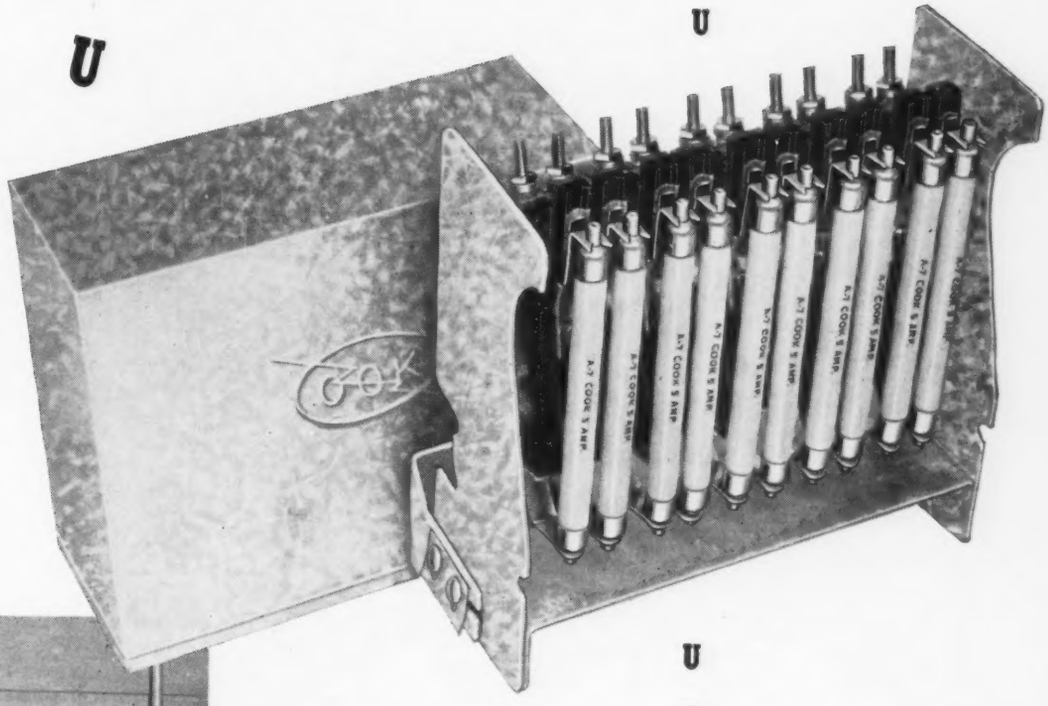
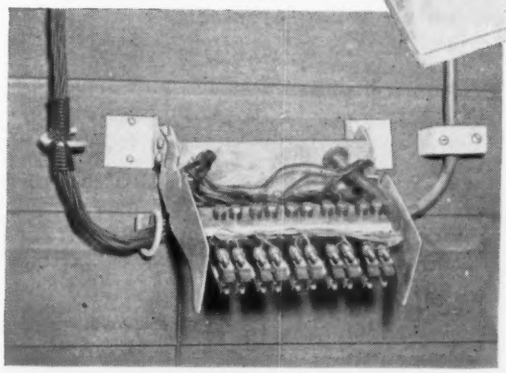


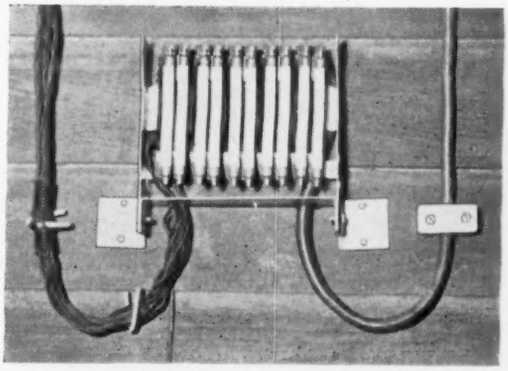
Fig. 153—Circuit of H-unit harmonic ringing converter.

YOU CAN UTILIZE THE TYPE U UTILITY PROTECTOR





Mounting brackets are so arranged that the base unit may be brought to a horizontal position to facilitate wire connections.



When connections are completed the entire unit is raised and secured in its permanent vertical position.

For protecting small cables and open wires up to 5 pairs per unit, at railroad crossings, power line crossovers and parallels.

It is especially valuable for the protection of subscribers drops where several instruments are closely grouped. It is an entirely new Cook protection product and completes the Trans-Mount scheme of inside and outside plant protection and cable termination.

The Type U is a compact, convenient unit furnishing the utmost in versatile utility. It consists of a sturdy, steel hot galvanized base fitted with non-corrosive studs on which as many as five Type H Protector Units may be mounted. A heavy galvanized hood and insulated entrance holes in the base make the entire unit weather and insect-proof.

Catalog No. (Complete Assembly) 517-1722

COOK ELECTRIC Company

Since 1897

2700 Southport Avenue **Chicago 14, Illinois**

ing voltage may cause cross ringing when the ringing generators are lightly loaded. The converter provides excellent voltage regulation on each of the five ringing frequencies. The output voltage of each frequency is practically independent of variations in input voltage, being practically constant from no-load to full load. Typical regulation curves of the ringing voltages of the converter are illustrated in *Figure* 158.

The power output of each frequency is conservatively rated at 0.2 amperes per output frequency. Because of the method of operation, the power output from the 5 frequencies is different. The maximum ringing power is available from the 60-cycle supply, then from the 30-, 20-, 40-, and 50-cycle output in that order. Because there is considerable ringing power from the 30-cycle generator, the manufacurer recommends that the output from this generator be used for all straight line ringing. The output of the five frequencies is sufficient to supply ringing power for offices up to approximately 2,000 lines. By splitting the ringing load larger offices can be served.

The power consumed is approximately 175 watts at no load and with all frequencies operating at full load rating, the input is approximately 300 watts. Because the converter does not operate at unity power factor the input current under the full load conditions may reach a maximum value of 4.5 amperes.

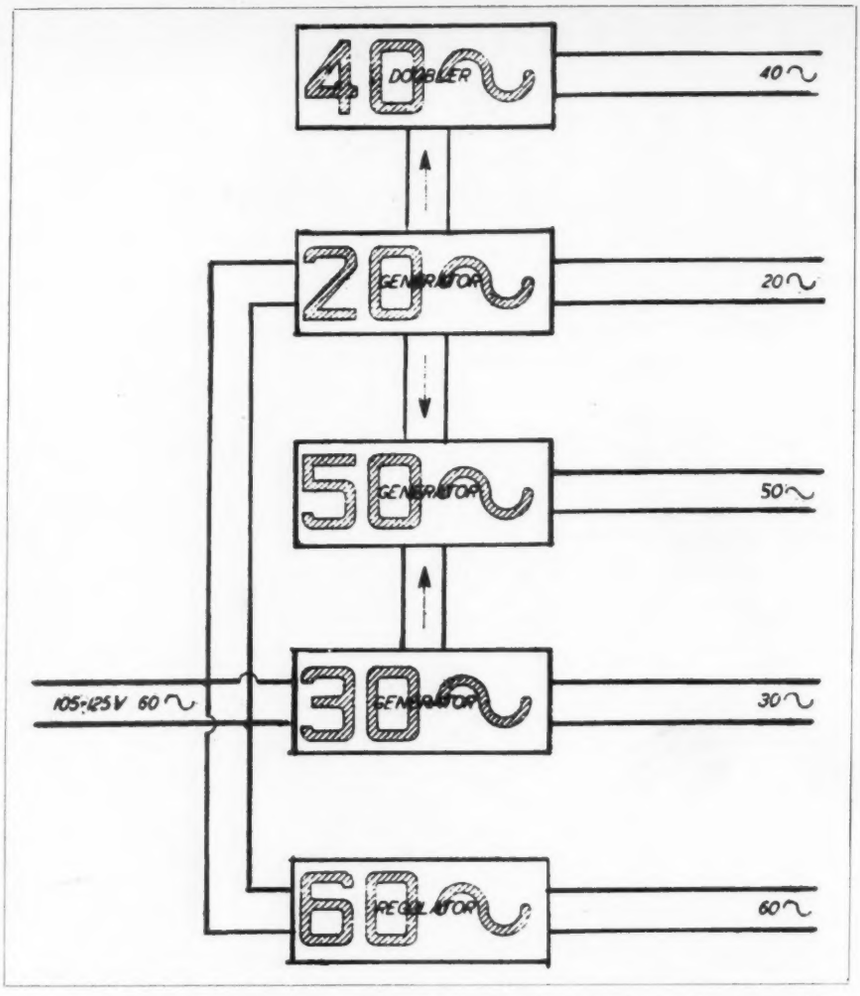


Fig. 157—Block diagram of Lorain Model K-5 Sub-Cycle Converter illustrating how the 60-cycle input supply is converted to five different frequencies for the decimonic ringing system.

The K-5 Sub-Cycle converter is designed to meet the demand for a moderately priced static frequency generator to provide five frequencies similar to the harmonic and synchromonic ringing systems. The unit is designed primarily for installations where a manual office is being replaced by a new system such as an automatic type of central office. However, some of the very earliest installations of the converter were conversion installations, that is, a synchronomonic or harmonic system of ringing was replaced by the decimonic system of ringing. Where such a conversion is contemplated, the recommendations of the telephone manufacturing company supplying the bells should be followed in removing the old telephone instruments and readjusting those of the bells which will be retained.

The converter is applicable to both large and small systems. The unit has been used in installations of 100 lines and in larger installations of 2,000 lines. This provides for ample growth of the exchange without purchasing additional ringing capacity.

(To Be Continued in the August Fortnightly Telephone Engineer.)

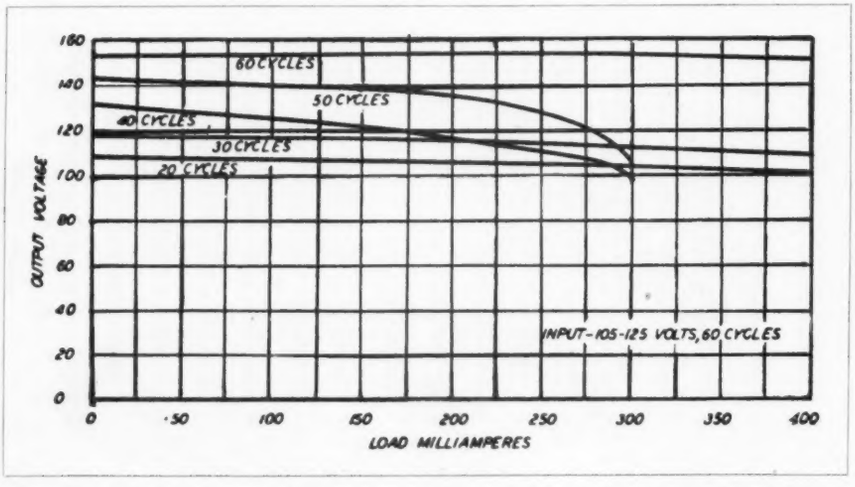


Fig. 158—Output voltage regulation curves of the Lorain Model K-5 Converter.

Automatic Service For Russell, Kans.

RUSSELL, Kans. should have a new dial system in operation by the fall of 1953, it was announced recently by W. S. Davin, manager of the Russell office of the American Telephone Co.

Davin said the equipment is to be manufactured and delivered to the company within 14 months at a cost of approximately $250,000. In addition, the company will place additional cable and new dial phones.

By BILL CORMAN,
Associate Editor

Small Company Talk

WHEN THE SUBJECT of fixing rates comes up, someone usually begins talking about some rates subsidizing others.

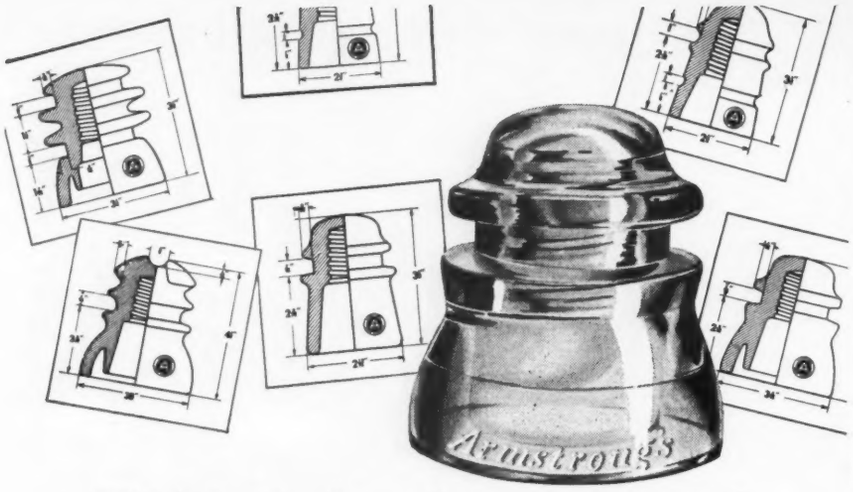
HI, NEIGHBOR! Rate increases continue to be one of the main things that telephone people talk about when they get together at conventions, meetings, etc., and rate making continues to be one of the most complicated problems in this undoubtedly complicated telephone business of ours. There is one little part of the problem on which I would at least like to focus the spotlight.

Almost inevitably, when the subject of fixing rates comes up, someone begins talking about some rates subsidizing some other rates. In the recent Alabama Bell rate case, the folks of Birmingham argued that Birmingham rates were set so as to subsidize the telephones in smaller towns and cities— other larger cities have made the same argument. REA seems to want the town telephones to subsidize the rural installations. Many small Independents have suspected, and sometimes voiced their opinion, that the Bell System, and those who operate in larger places, subsidize residence rates with overly high business rates.

The subject is one of almost universal conversation, but I don't recall ever having seen the first figure prepared by a close study of the subject, and specifying which rates are subsidizing with others. Another thing that a lot of folks are beginning to believe is that party line rates have historically subsidized individual line rates: and, if this is true, it is certainly a twist in the normal routine. Normally, the price of the "luxury" item supports the "necessity" item. But, if you can make a rough comparison and call individual lines "luxuries" and party lines "necessities", then the telephone business has the usual routine turned around backwards.

I am not sure in my own mind, exactly, whether it makes a whole lot of difference to larger companies whether or not one grade, or class, or type of service is subsidizing another, and to what extent. Many companies

THE RECENT emphasis on higher rates for business telephones is probably a growing recognition of the telephone's true value to a business.



Which design for your lines?

No matter what your communications or low-voltage requirement, there is an Armstrong's Glass Insulator to fit your needs.

The extra strength of these precision-molded insulators safely supports abnormal loads that can bend standard metal mounting pins. Yet they are molded so carefully that linemen like their smooth, safe-to-handle seams. Because threads are hand-gauged for absolute accuracy, they fit pins perfectly.

Find out how Armstrong's Glass Insulators can help you reduce maintenance and replacement costs. See your near-by distributor or write to Armstrong Cork Co., Glass and Closure Div., 295 Fifth Ave., New York 16, New York.

ARMSTRONG'S GLASS INSULATORS

for communications . . . for power

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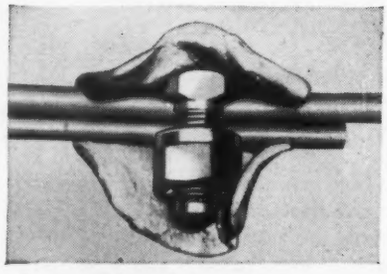
the MODERN WAY TO SEAL ELECTRICAL CONNECTIONS

AIRSEAL applied over a connector

Kearney AIRSEAL is a pliable high-dielectric compound for use on all electrical connections. It seals out corrosion and oxidation and maintains electrical efficiency and eliminates over-heating at joints.

AIRSEAL is easier to apply and much more effective than electrician's tape. Because it is chemically inert, it will not harden or deteriorate — forms a permanent seal.



Secure sealing of connectors is accomplished readily because of the pliability of *AIRSEAL*. Application is made by kneading the compound over the connector.

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JAMES R. KEARNEY CORPORATION

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Canadian Plant: Guelph, Ontario

are going more and more on the rate-making theory, it would appear, that so long as the total revenue is enough to cover expense and a fair rate of return, and at the same time, keeps the majority of the customers satisfied with their rates, then the rates are OK.

And regardless of how you look at it, there is a lot to be said for that sort of theory. A set of rates that keeps the subscribers happy is certainly a desirable partial goal for any telephone company.

We can add to these, the further theory of basing the charge for service on what it is worth to the customer. The recent considerable emphasis on higher rates for business is probably a growing recognition on the part of telephone company, commission, and business houses, as to just how valuable a telephone is to a business these days. *Before you would give it up, how much would you pay for a telephone in your business?*

"Ability To Pay"

STILL ANOTHER theory, and one popular with the tax makers, is the ability-to-pay idea. For undoubtedly, both *ability* and *willingness* to pay are a definite problem in rate making.

But getting back to subsidized rates, the problem gets more complicated the more you get into it. For example, which is subsidizing which in the matter of local service and long distance service? The recent fracas among telephone companies, congress and the FCC over separations (of toll and local facility investments) grows directly out of the question of which is subsidizing the other.

This matter becomes more complicated when the jurisdictions and respective interests of the various commissions involved are studied. The FCC naturally would like to reduce interstate rates so that it could brag to the public about what Uncle Sam is doing for it. The State Commissions, many of whom are elected by popular vote, want to do the same thing on intrastate and local rates, so that, even though the telephone company wants to get into politics about as much as it wants a toothache, mixing into the politics of the thing has become an enforced function of telephone management.

"Subsidies Always Hurt Somebody"

NOW, NEIGHBOR, before you get discouraged with all these complications and high sounding theories,

let's get down to what we are interested in—what, if anything, does all of this mean to the little telephone company? It means plenty—and not just a little bit plenty, but a whole lot plenty. If you haven't figured out that *subsidies always hurt somebody,* then you don't really know what a subsidy is.

If the average telephone company in the United States *is* subsidizing its residence phones, by high rates on the business phones, where does this leave the little company that has a very low percentage of business telephones, as many of us little folks have? And *if,* for example, rural phones are being subsidized by town phones, where does that leave the little company that has a great preponderance of rural service? I'll tell you where it leaves you—right behind the eight ball!

For *if* those things are true, and remember we haven't come around yet to saying that they are, but if they are true, then when your residence and rural subscribers go to comparing their rates with the rates of another company, they are going to come up with the unpleasant fact that they are paying much more for their respective service.

Naturally, if you don't have the business phone percentage that another company does, then you can't subsidize the residence phones, and you have to charge higher residence rates in order to get the same overall per station revenue. The same thing applies if you don't have the town phone percentage of some other companies; you have to charge higher rural rates than does someone else who can subsidize the rural phones.

This problem, incidentally, I suspect, is one that has given REA some bad moments. The two methods by which they seem to have gone after, or around, the problem may be worth some study by you and me. First of all, they have pretty largely ignored the existing schedule of rural service rates and have come up with some rural rates that seem, to the rest of us, pretty high.

They are also subsidizing to the hilt the rural phones, by upping town rates. But note that they place no emphasis at all on the matter in *that* light. What they do pound on is the fact that if the rural telephones are installed, the town telephones are *much more valuable* to the town subscribers, and with me, Neighbor, the fact that that *is* a fact does not take much convincing. In the average small or medium sized Independent's company, the town is largely dependent for its prosperity upon the prosperity of the trade area around it. If that trade area can be tied to the town with telephone service, the town is undoubtedly and greatly benefited. This little deviation into what REA is doing, however, is parenthetical to the main topic of subsidies.

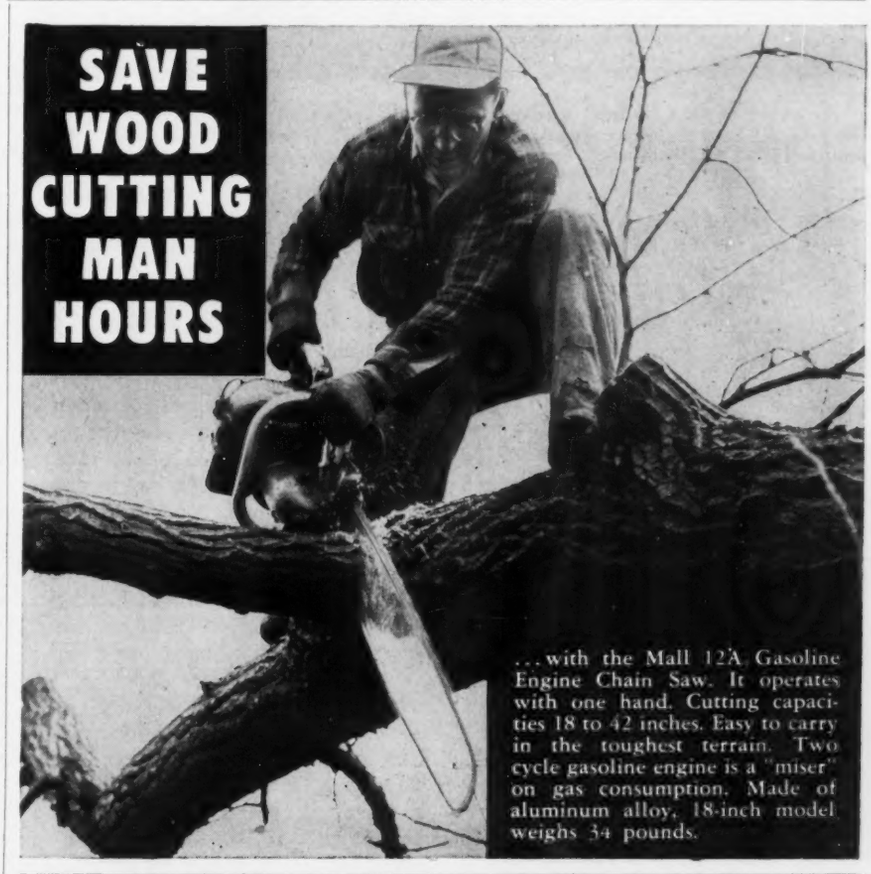
From what we have said, then, it is fairly evident that we little companies do have considerable interest in who is subsidizing what, and to what extent.

Although, as I have said, I have not seen the first exact study on the subject, I strongly suspect that three classes of subsidies are taking place, within rental rates, in the average company in your state and in mine:

(1) The Business Phones are subsidizing the Residence Phones.
(2) The Town Phones are subsidizing the Rural Phones.
(3) The Party Line Phones are subsidizing the individual lines.

Through your association, and through the Bell System in your state, you may be able to do something about the first two. You can put forth sound reasons to the larger companies and groups as to why they should put more emphasis on increases on

(*Please turn to page 69*)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Members of this Indiana Convention group are (l. to r.): G. A. Steele, Warsaw; I. W. Porter, Indianapolis; T. A. Danielson, Warsaw; Wm. Robey, Indianapolis; R. H. Burfeind, Chicago; and Vern Robinson, Winchester.

State Association Activities

C. E. McCormick Heads Indiana Association

TWO PROGRAMS devoted to the functions, needs, and problems of small telephone exchanges were the highlights of the recent annual convention of the Indiana Telephone Association.

C. E. McCormick, vice president and general manager of the Citizens Independent Telephone Co., Terre Haute, was elected president of the association for the coming year, while Francis Simpson, general manager of the Eastern Indiana Telephone Co., Winchester, and Herbert E. Hussey, president of the Indiana Associated Telephone Co., were named vice presidents, and W. H. Beck, was re-elected secretary-treasurer.

H. S. Hanna, president of the Indiana Bell Telephone Co., was named a director, succeeding T. D. Dial of Indiana Bell. Directors re-elected for 3-year terms ending in 1955 are: Frank E. Bohn, Fort Wayne; Ralph Lucier, Warsaw; C. E. McCormick, Terre Haute; S. K. Trippett, Princeton, and R. D. Pontius, Rochester.

"The Small Exchange—Its Function And Needs" received close attention at the first convention session in addresses delivered by: Hugh Abbett, chairman of the Public Service Commission of Indiana; Ralph F. Lucier, president of United Telephone Co., Warsaw; C. Ivan Heare, plant superintendent, Citizens Telephone Co., Decatur; Mrs. Irene Fieldman, chief operator of Indiana Telephone Corp.; Lamar S. Stoops, general manager of Nappanee Telephone Co.; and Robert Hansen, director, Princeton (Ind.) Telephone Co.

Discussing "The Function of The Small Exchange", Mr. Abbett's first point was directed to the small telephone exchanges which are still operating with manual equipment. He emphasized that what the exchanges had to sell was service and good will in the form of a neighborly attitude to its subscribers and indicated that a toll call made over small exchange circuits was just as important to the subscriber as a toll call made over a well-maintained system, and that the importance of the call could not be measured because the subscriber lived in a small community.

Mr. Abbett also emphasized the facts that the subscribers of a small community were driving up-to-date automobiles, practically all of them have radios and many avail themselves with television and that the Rural Electrification Administration had provided electricity to the rural areas and had raised the standards of the farm home in doing so. He stated that a 1902 model telephone hanging on the wall was not a proper setting for the present rural home and tended to date the service being furnished by the telephone company.

Mr. Abbett stated that another point was that many of the ills which are part of the small telephone exchanges have come about as a result of improper rates and that it was in the public interest for the small companies to maintain a realistic rate level in order that they will be able to meet the demands of their subscribers for reasonably adequate service. He commented that if the service dropped to a very low level, it was difficult to convince the subscribers that an increase in rates would very quickly give them the service to which they are entitled.

He concluded by saying: "I was a subscriber of a small exchange and the service was good, I enjoyed it, and feel there is hope for many of the

Convention registration desk was busy place as Independents registered for 32nd annual convention of Indiana Telephone Association.

Photographed between sessions of recent Indiana Convention are (l. to r.): Lamar Stoops, Nappanee; R. F. Lucier, Warsaw; Hugh Abbett, Indianapolis; Cliff McCormick, Terre Haute; and Ivan Heare, Decatur.

small exchanges if they will try to sell a good neighbor attitude together with reasonably adequate service. . ."

In his discussion of "Management and Finance", Mr. Lucier pointed out that in his opinion the small exchanges could be made to pay providing management would take an aggressive policy in regard to seeking rate adjustments and that this must be done if these small units are to survive at all. He further pointed out that the job is much easier where maintenance, accounting and overhead are spread on the basis of 1,000 stations or more.

Discussing the discouraging factors that are retarding and, in a good many cases, completely eliminating the flow of equity capital into the Independent companies, Mr. Lucier stated the factors are:

(1) Extremely high Federal Taxes.

(2) Local taxes that are being applied at a rate double the amount imposed on other real property in the same communities.

(3) An entirely unrealistic approach to rate making on the part of the regulatory bodies who are still thinking in terms of 6% of original cost depreciated.

If the Independent industry in general and the small companies in particular are to survive and meet the inflationary situation which affects not only their expansion programs but the replacement of existing plant units as well, this thinking must be corrected. Not only must a higher rate of return be allowed, but also a rate base that takes into account the present value as compared to other real property.

(Turn to page 62)

Indiana conventioners shown above are (l. to r.): Chester Ruth, Chicago; Ralph Lucier, Warsaw; Francis Simpson, Winchester; Wm. Scheidler, Greensburg; Herbert Hussey, Lafayette; and DeWitt Gibson, Chicago.

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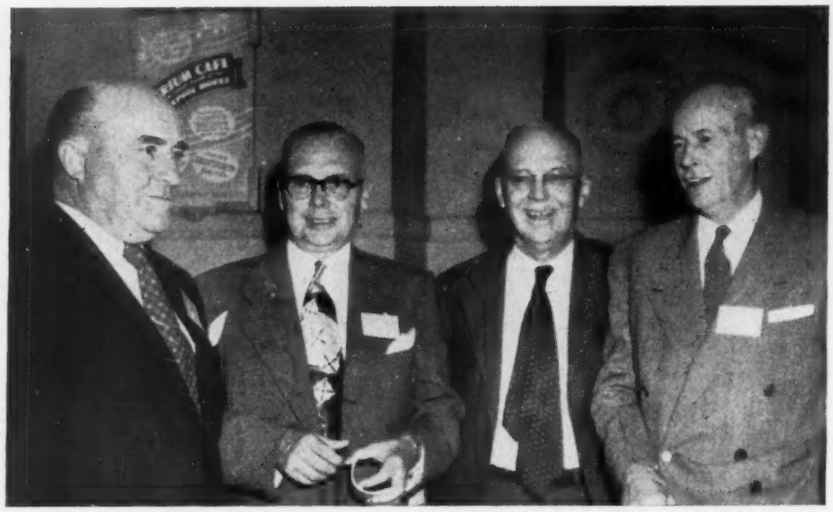
(Continued from page 61)

Mr. Lucier stated that a good example of the low ebb of the appraisal of investors toward the Independent telephone field was graphically illustrated by the sale of the Detchon properties in Indiana which had to be sold to settle Mr. Detchon's estate. For a large portion of the properties there was only one potential bidder and that was an arm of the Federal Government, namely, the REA.

The "Problems of Small Companies" were discussed at the final convention session by speakers W. J. Scheidler, Greensburg, chairman of the Indiana Association's Small Company Committee; Carl Cecil, chief accountant of the Public Service Commission of Indiana; F. A. Hoffman, general plant superintendent, General Telephone Co., Inc. of Indiana, and C. W. Potter, vice president and general manager of the Indiana Bell Telephone Co.

Mr. Scheidler presented a review of the work done by the Association during the past few years, going back to 1946 when the secretary of the Indiana Association, together with a staff of competent telephone men, held 17 district meetings throughout the state of Indiana, at which time the small companies were invited and their problems discussed. There followed, year after year, similar meetings.



Indiana conventioners shown above are (l. to r.): F. A. Hoffman and H. R. Christianson, of Lafayette; R. V. Achatz, Aurora; and T. C. Thompson, Rochester, N. Y.

During the fall of 1951 at least 140 of 258 small telephone companies were contacted to ascertain whether or not any help was needed by them. There were far too many companies that had done very little with respect to improving their conditions throughout the years and who desired help in accounting, engineering, financing, and rates.

There were many questions from the floor of the convention directed to the panel. One of the main points brought out was that many small telephone companies have had rates which did not provide enough revenue to maintain their property and they now find themselves with a broken down plant and no cash de-

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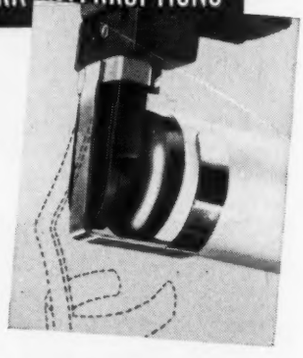

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preciation reserve. The consensus of opinion was that the Public Service Commission of Indiana should, upon proper showing by the petitioner, give it "if" and "when" rates. With this assurance, the petitioner would be in a position to borrow money to rehabilitate its property, and when this had been done that it be authorized to apply the new rates.

From convention comments with respect to the program on the problems of small telephone companies, there certainly is now aroused in the minds of Indiana telephone people the necessity to attack the small company problems in the most vigorous possible way.

Joint Convention Held By Missouri-Kansas Groups

REGULATIONS holding down rates and at the same time requiring minimum wages face Missouri and Kansas telephone company executives today as one of their biggest problems.

This was the general opinion expressed during a 3-day joint meeting of the Kansas and Missouri Telephone Associations at the Town House, Kansas City, Kans. About 500 executives and employees attended the 2-state conference, the first joint meeting the two associations ever have held.

Keeping income apace with costs is as hard on small telephone companies as on other free enterprises, R. R. Coffman of Cameron, Mo., first vice-president of the Middle States Utilities Company, operating 52 exchanges, explained.

Restrictions, rising costs, government regulations and the REA all are contributing to give the small telephone company a battle for its life today, it was added.

The small town telephone company must keep up to date and still cannot charge rates matching increasing costs, said R. W. Warren, Ellinwood, Kas., who owns the Ellinwood Telephone Exchange.

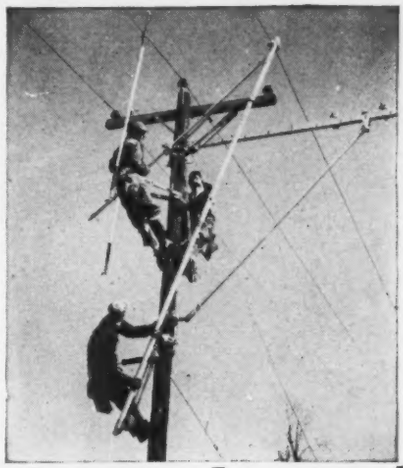
One of the main topics on the program was discussions of problems encountered by the small companies. William F. Miller, secretary, and Howard C. Amick, director of the Iowa Telephone Association, led a small company discussion at the opening convention session.

Other principal addresses were presented by: Harry Darby, prominent Kansas City, Kans., industrialist and former U. S. senator; James J. Fredman, Kansas City, Mo., representative of Folger's Coffee Co.; Thomas W. McMahon, Jr., of the Chase National Bank, New York; and J. A. Griffith, commercial supervisor of Southwestern Bell Telephone Co.

Mr. Darby told the convention the growth of the telephone industry into an international system of communication could not have been achieved without the freedom of enterprise we have in the United States. "Historic facts," he said, "prove that in two European countries there were men of vision and of wisdom who had suggested or devised so-called telephones before America's Alexander Graham

Members of this Indiana Convention foursome are (l. to r.): C. D. Ingebrand, Ft. Wayne; Chas. Ehinger, Decatur; Herbert Hussy, Lafayette; and Bill Beck, Indianapolis.

SAFE ON THE JOB



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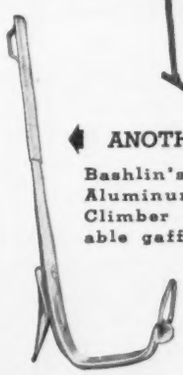

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Missouri conventioners shown above are (l. to r.): Helen Phillippe, Columbia; Foster B. McHenry, Jefferson City; A. B. Preble, Kansas City; Ray Smith, Chicago; J. M. Roberts, Gallatin; Mack Sauer, Leesburg, Ohio; T. L. Leonard, St. Louis; and Katharine Bauer, Jefferson City.

Bell had grown out of his teens." "Bnt what happened to these so-called telephones in these two European countries? It is a disheartening story and very typical of conditions in countries where freedom of enterprise is not an expression to be proud of . . . but where it is actually discouraged. These inventions died from want of nourishment."

Even after the telephone was made available to European nations, official attitude tended to restrict it, Darby told the telephone men. Czechoslovakia, with three telephones for each 1000 persons, has the highest ratio of any of the nations behind the iron curtain, Darby said.

The speaker noted that in other countries, not under a dictatorship, where business customs are similar to our own, telephone usage and service still does not measure up to U. S. standards.

"In practically all these nations," he said, "the telephone system is operated by the government. This has frequently been the first step toward other far reaching efforts to socialize basic industries."

Darby, a former U. S. senator, issued a warning to the delegates that a threat, stemming from "men who are in high positions," is striking at the heart of our country. These forces seek to tear down everything our fathers fought for," he said.

Speaking to the Kansas delegates, Darby reminded them of the state law requiring them to register for the vote every four years.

"This year, the small numbers thus far registering is frightening and disheartening, he said.

"You must in behalf of free enterprise use every means possible to see that your employees and their families are qualified to vote," he said.

Darby told the telephone men that they represent one of the most unique businesses in the world because they are brokers whose commodity is talk.

The Kansas Telephone Association elected four new members to its board of directors. The new directors elected are: H. H. Welsh, Nortonville; H. L. Zegeinbein, Osage City; Paul Grauer, Wilson, and Hubert W. Froman, Edna.

The other directors in office are: G. W. Coffin, Council Grove; Carl L. Spaid, Kansas City; Carl A. Kraege, Fredonia; Clyde E. Tucker, Pleasanton; A. J. Harty, Great Bend; Fred A. Schneider, Topeka; R. J. Fegan, Junction City; and J. R. Shipley, Caldwell.

All officers of the Kansas Telephone Association were reelected except Secretary H. B. Couch, who was asked by President Carl Spaid to remain

Registration desk at recent Missouri-Kansas Convention.

as acting secretary. New members of the Executive Committee are: H. H. Welsh, Nortonville; Paul Grauer, Wilson; H. W. Froman, Edna, and H. L. Ziegenbein, Osage City.

Ross Gault of Wellsville was appointed to fill the unexpired term of C. A. Kraege.

At the annual meeting of the Theodore Gary Chapter, ITPA, the following officers were elected: President, J. O. Kent, Huntsville; Vice President, J. G. Kreamer, Kansas City; Secretary-Treasurer, Katharine A. Bauer. Directors elected are Miss Leolynn Sneed, Keytesville; Harold A. Jones, Gilliam; and Eldrige King, Kansas City.

V. R. Youll Heads N. Dakota Assoc.

V. R. YOULL of Devils Lake, N. D., was elected president of the North Dakota Telephone Assn., at the closing session of the group's recent 2-day convention in Minot. He succeeds Joe Wilhelmi of Washburn.

John Gotteberg, Valley City, was elected vice-president and W. G. Matson of Stanley was elected secretary-treasurer, succeeding A. J. McInnes of Fargo, who has served many years in that capacity.

Casper Braaten, McVille, was elected director. Directors reelected were R. R. Borman, Youll and Gotteberg.

60 representatives of the North Dakota telephone companies registered for the 44th annual convention of the North Dakota Association.

The convention was called to order with the official welcome by Mayor H. C. Kiehn. The response was made by Mr. Borman, a member of the board of directors of the association.

Speakers at the sessions were: Clifford C. Pearce, manager and secretary of the Farmers Telephone Co., Riceville, Ia.; Joe Wilhelmi, president of the state association and district manager of the North Dakota Telephone Co. at Washburn; Hal S. Davies, publisher of the Minot Daily News; Howard F. Van Zandt, assistant sales manager of the Kellogg Switchboard & Supply Co., Chicago; F. Ward Wray, Fargo, telephone appraiser for the Rural Electrification Administration, and J. E. Sellers, manager of the Hunt Oil Co. office at Minot.

ASSOCIATIONS:

Conference In Spokane

MORE THAN 40 telephone company executives, members of the Washington Independent Telephone Associa-

(*Please turn to page* 68)

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Any way you look at it

Your telephone is worth far more than it costs.
The cost of a call can be counted in pennies.
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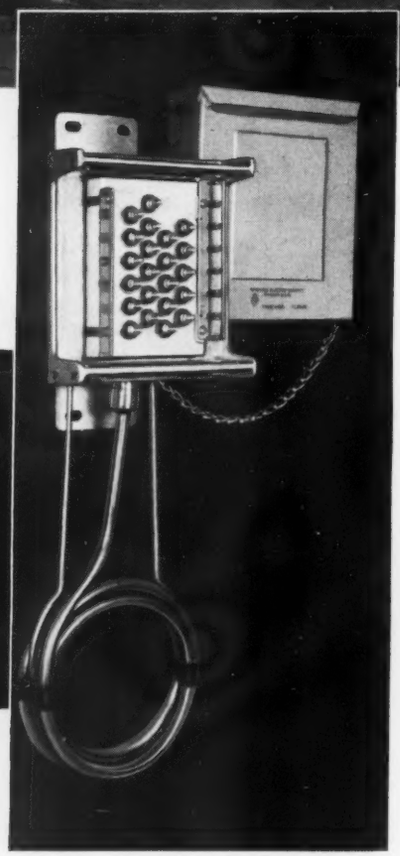

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(Continued from page 65)

tion, held a conference recently at the Davenport Hotel, Spokane, Wash.

A. J. Zimmerman, Seattle business consultant and former director of the Public Utilities Commission, conducted the meeting.

Zimmerman said the conference was one of a series of regional meetings being conducted to bring together the officials of the 69 member companies in the state for a discussion of mutual problems.

A breakdown of growth of the association over a 10-year period was given at the meeting.

It was shown that in 1940, association members had 355,000 telephones in the state. In 1950 it had 750,000, with an investment jumping from $82,500,000 to $197,000,000.

QUOTE

"The cost of living can be kept from reaching ruinous heights only if we increase our productivity, siphon off surplus dollars, and help stop 'wage-price leap frog'." — *Somerville (Mass.) Journal.*

Employees over the same period increased from 5500 to 11,000 and total taxes jumped from $3,300,000 to $21,500,000.

"Of every dollar paid in 1950 by Washington telephone customers, about a quarter went for taxes and the proportion is even greater today," Zimmerman said.

On the investment side, Zimmerman said the companies had approximately a million miles of wire in cables over the state in 1940. Today the figure is 2,165,000.

The expansion in other equipment and in buildings has been in proportion, he said.

Companies represented at the conference were Pacific Tel., Interstate Tel. Co., Oregon-Washington, Hood River, Ore., Creston Tel. Co., Republic Tel Co., Tonasket Tel Co., Columbia Flats Co., Methow Valley Co., and Cowiche Co.

Zimmerman said delegates discussed various phases dealing with the improvement of telephone service to smaller communities and methods of assisting association members in solving service problems. He said one of the problems confronting the association is how best to serve "the many farms that will be developed when the irrigation projects are completed in the Columbia basin and Inland Empire."

"Small Company Talk"

(*Continued from page* 59)

residence and rural phones so that when you get your next increase, your residence and rural rates will not be so far out of line as they would otherwise be. In some cases, you might also find a receptive ear on your commission. There are a lot of good arguments you can advance to your commission on the subject, arguments which can be put so as to make good listening to the commission.

The third, you can do something about yourself. The average 25 cent and 50 cent spread between the different grades of service does not even approach the respective costs of furnishing those different grades. With what figures I have been able to dig out of my own company for example, the indications are that our 2-party service should be about 75% of the one party rate; and that the 4-party rate should be about 50% of the one party rate. Which means that if the one party rate is $4.00, the two party rate should be about $3.00 and the four party rate about $2.00.

Of course, every company is different, and what is practical in one place is not in another. But it is definitely a matter to which you should give some attention. With lines for your central office and cable pairs increasing in price as they have recently, all the emphasis you can give to party line saturation is certainly well placed. For one central office line and one cable pair will serve a two or four party line just the same as they will serve an individual line.

Don't however, go overboard and figure that party line costs decrease in direct proportion to the number on the line—they don't. Plant investment, with the exception even there of the instrument, is the only item that decreases directly in proportion. Other items of expense decrease, but less and less in proportion until you reach commercial expense which probably does not decrease at all—it costs just about as much to do the commercial work on a 2-party telephone or a 4-party telephone as it costs on a 1-party. In other words, you can't say that it costs you one-half as much to serve a 2-party phone as it does a 1-party, or one-fourth as much to serve a 4-party, or one-eighth as much to serve an 8-party—as you can see it doesn't work that way. But there is undoubtedly more reduction in costs than is reflected in many rate schedules that have only a 25 to 50 cent spread.

It may occur to you to wonder why the emphasis on getting at least

(*Please turn to page* 70)

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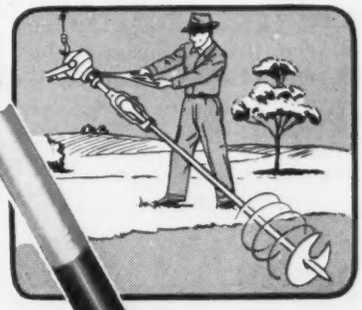
have a KING-SIZE Thimbleye

for machine or hand installation

Have you tried installing Chance Screw Anchors by machine? It's fast . . . it's economical . . . and it's simple—the oversize Thimbleye on Chance Screw Anchors will readily fit into an adapter that you can get for your hole boring machine. Machine installation saves many costly man hours on big line construction jobs and also solves the installation problem in areas where it is difficult to install screw anchors by hand.

This same "king-size" Thimbleye gives ample room to insert a turning bar big enough for extra leverage in hand installations.



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C52-8

You should have a copy of "How Much will an Anchor Hold?" This Chance formula tells what type and kind of anchor to use for every guying condition. Write for your copy today.

some of your rates into more direct proportion to the cost of those respective types and grades of service. I suppose the basic reason why, is that commissions still largely determine rates on the rate base idea (total revenue less expense equals net return, and net return is regarded as a percentage of investment). If the over-all picture is tied to the expense of furnishing the service, then it would seem that there is considerable basis for the logic that at least some attention should be paid to apportioning out this expense to the various grades and types of service. At least if you do abandon all effort to make such a tie in, you should realize what you are doing and should have convinced yourself that your subsidizing is more beneficial than it is hurtful—for subsidies, again, always work both ways. There is some pretty good argument, for example, that it may be prudent to subsidize the weak grades of service, that is, the grades of service concerning which there is considerable doubt as to their permanence, revenue producing ability, etc., and rural service in many areas definitely comes in this classification. For if you do subsidize such service, then, if and when it is abandoned, your revenue picture is not hurt as much as if this service were carrying its full share of the expense distribution.

But that argument can be turned to this: it is dangerous to subsidize, and therefore encourage more people to take, a weak-sister grade of service, for then more people will take it, and if it does turn out to be non-permanent and very low-revenue-producing in the long run, then you have certainly not done yourself and your other subscribers any good. My point is that I do not subscribe, or encourage you to subscribe, to such an argument exclusively in either its favorable or unfavorable light, but that I believe when you do subsidize one service at the expense of another, you should do so with your eyes open and after considering both the favorable and unfavorable aspects of that particular subsidy.

Neither am I saying that subsidies are either always right or always wrong—but I am saying that there are always both sides to the picture, so that if you do subsidize, it should be based on a conscious choice on your part because you think there is more right to it than wrong, more favorable than unfavorable.

Rate making, as I said before, is not simple. Historical precedent and surrounding contemporary precedent are sometimes almost impossible of avoiding, even indeed if you want to avoid them, but most commissions will listen to sound reasons for doing something perhaps a little different from how it has been done before. My point is not that you should do either this or that, but that whatever you do set up in the way of rates should be based on logical consideration of the elements involved. —THE END.

New Coal Tar Base Enamel Quantity Calculator

A NEW COAL tar base enamel quantity calculator has been announced by Reilly Tar & Chemical Corp., 1615 Merchants Bank Building, Indianapolis, Indiana.

The calculator gives estimates for quantities of Enamel required in pounds per thousand feet and gallons per mile estimates on two grades of primer, and gives estimates for coupling compound required for mechanical couplings on pipe of nominal size from 2" through 48". Also, tables of recommended temperatures of application for Enamel are given, and estimates for drying time on Primer are tabulated.

Information on quantities required for hand application of coal tar base enamels to irregularly shaped engineering structures is given.

On the reverse side a Manheim type slide rule is available for multiplication, division etc., covering generally the calculations needed to estimate the total amount of material required on any pipe line coating job. The slide rule has C, D, CF, DF, A and B scales, and is provided with a plastic hairline slide.

The calculator can be obtained by writing to Reilly Tar & Chemical Corp. on your company letterhead.

New coal tar base calculator.

Construction
With the Double
and America's
this Nicopress
sleeve
plus
this Nicopress
17-2
tool
make better pair splices
faster than you've ever
made them before!
Pair splices, made the Nicopress wa
can't pull out—and they're made i
half the usual time!
STROMBERG Telephone CARLSON
TELEPHONES, SWITCHBOARDS • SOUND

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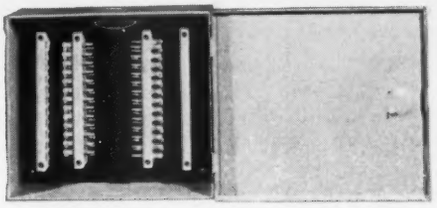
Guarantee of Stromberg-Carlson Leading Manufacturers . . .



cook type "57" interior terminal box

The type 57 interior terminal box is for distribution and termination of lead-covered or loom cable for low-voltage circuits. The box itself which has an Underwriters' Laboratory listing is constructed of smoothly enameled steel, with hinged cover and necessary knock-outs. Fanning strips and terminal strips are provided as well as screw connectors on the drop sides and solder clips for cable wires.

RAYTHEON RectiChargeR*

maintains constant voltage output over the complete load range!

Maintains the close voltage limits required by telephone systems and reduces such common difficulties as incorrect ringing, line noises and lamp failures. The constant potential method of charging prevents battery gassing and water loss. A smaller maintenance crew can handle a greater number of installations.

A small storage battery floated across the terminals of a Raytheon RectiChargeR for emergency and peak period use is kept at constant cell voltage so that it never becomes overcharged or undercharged . . . thus prolonging the life of the battery.

The frequent use of the Raytheon RectiChargeR in unattended exchanges is ample proof of its dependability. Available from 1.0 to 100.0 amperes with either 24 or 48 volt output.

*Reg. U.S. Pat. Off.

Churchill No. 100 Folding Door Telephone Booth

The churchill ventilated telephone booth

Attractive—available in two finishes to harmonize with any interior. Included as standard equipment are electric light and automatic electric ventilator.

Users appreciate the comfort and privacy of a Churchill telephone booth—operating companies find it profitable.

Constructed as a single unit and equipped with reinforced back panel for mounting a wall telephone or coin collector.

No. 100-A—Selected white oak, in light or medium oak satin finish.

No. 100-B—Birch, mahogany finish.

Overall height is 84¾"; width, 30½"; depth, 30½". Shipped knocked down and crated.

Illustrated literature available.

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ROCHESTER 3, NEW YORK

EQUIPMENT AND ELECTRONIC CARILLONS • INDUSTRIAL, INTERCOMMUNICATION SYSTEMS • TELEVISION, RADIOS AND RADIO-PHONOGRAPHS

John J. Eibye, Raytheon Telephone Products Sales Manager, is shown presenting a $100 Defense Bond to J. R. Shipley who entered the lowest serial number. The RectiChargeR, shown here, has been on the job since February, 1937.

15-YEAR-OLD MODEL WINS OLDEST RAYTHEON RECTICHARGER® SEARCH

After fifteen years of continuous, dependable service, the "oldest" Raytheon RectiChargeR found in our search, is still very much on the job . . . as good as ever.

Mr. J. R. Shipley, Manager of the Caldwell Telephone Company, Caldwell, Kansas, was awarded a $100 United States Defense Bond for reporting the lowest serial number. His Company was awarded a new RectiChargeR, rated 24 volts at 6 amperes, to replace the old model which will be on display at the U. S. I. T. A. Convention in Chicago, October, 1952. It will then be shipped to the Raytheon Engineering Laboratory for further study.

This study will contribute much to the development of new and still better models, capable of giving the Telephone Industry dependable service year after year at lowest cost.

We wish to thank the many telephone company officials who entered serial numbers in the Oldest RectiChargeR Search which closed March 31, 1952. Their interest and good will are deeply appreciated.

RAYTHEON
MANUFACTURING COMPANY
EQUIPMENT SALES DIVISION
DEPT. 6270- TE WALTHAM 54, MASSACHUSETTS
DISTRICT OFFICES: BOSTON, NEW YORK, CLEVELAND, CHICAGO, NEW ORLEANS, LOS ANGELES (WILMINGTON), SAN FRANCISCO, SEATTLE
INTERNATIONAL DIVISION: 19 RECTOR ST., NEW YORK CITY

RAYTHEON PRODUCTS INCLUDE: RectiChargeR* battery chargers; RectiFilteR* battery eliminators; Voltage stabilizers (regulators); Transformers; Tubes and other electronic equipment.

*Reg. U. S. Pat. Off.

Your regular supplier offers a complete line of Raytheon RECTICHARGERS and RECTIFILTERS for all telephone requirements. Ask him for information or write us direct.

Small Company Acctg.

(*Continued from page* 43)

Actually there would be other accounts involved on the balance sheet, but they are purposely omitted to avoid confusion. You see I want to keep the illustrations simple so you can follow me.

You are now in business. During the year ending Dec. 31, 1932 we will assume you made 6% net earning on your investment, therefore you earned a net profit of $6,000. during the first year. Not bad for the year 1932, or don't you recall? Furthermore, since you are an industrious and conservative operator we will assume you paid only $4,000. of your earning in the form of dividends and retained $2,000. in the business. Now your balance sheet will look like this :

DEC. 31, 1932

ASSETS		
Plant Invesment		$100,000.
Cash:		
From Reserve for Replacement	$5,000.	
From Earned Surplus	2,000.	
Total Cash		7,000.
Total Assets		$107,000.
LIABILITIES		
Capital Stock		$100,000.
Depreciation Reserve, or Replacement Reserve		5,000.
From Retained Earnings, Earned Surplus		2,000.
Total Liabilities		$107,000.

Looks like the balance sheet is getting a bit more complicated, doesn't it? So, we'll look at it item by item. First of all you will notice that Plant Investment has not changed, nor has the Capital Stock. But where did that cash item of $7,000. come from? Remember I mentioned depreciation expense, or replacement expense, before? In this illustration we are charging 5% of your investment per year to replacement expense. So 5% of the plant investment of $100,000. is $5,000. for the year. This 5%, or $5,000. per year is theoretically held in reserve to replace the plant when it is no longer useful, that is why it is shown as depreciation reserve, or replacement reserve, on the Liabilities side and as cash on the Assets side of the balance sheet. Now we have accounted for $5,000. of the $7,000.

which leaves $2,000 cash to account for. That $2,000. is cash left in the business (out of earnings) as mentioned before, and is shown under the liabilities side as Earned Surplus. It may be of interest to mention here that our business is now worth $2,000 more on the books than when we started one year prior. In other words, our book value Net Worth is now $102,000. or Net Worth is Capital Stock plus Surplus. That sounds reasonable, doesn't it? We started out with $100,000. and retained $2,000. of earnings in the business, hence the increased worth of the enterprise to the stockholder.

Let us get on to the end of the 20 year life expectancy of the plant we started with. We will assume we repeated the 1932 experience of earnings, dividends paid, earnings left in the business, plant replacement expense charges etc. Therewith on Dec. 31, 1952 our Balance Sheet will look like this:

DEC. 31, 1952

ASSETS

Plant Investment		$100,000.
Cash:		
From Reserve for Replacement	$100,000.	
From Earned Surplus	40,000.	
Total Cash		140,000.
Total Assets		$240,000.

LIABILITIES

Capital Stock	$100,000.
Replacement Reserve	100,000.
Earned Surplus	40,000.
Total Liabilities	$240,000.

Looks pretty good you say? Well, in a way yes, and in another way no. There lies a hidden problem therein. Let's analyze it. For this sketch we have assumed the exchange, after 20 years, is completely and absolutely worthless (like the one-horse-shay). At this point we would strike out the Plant Investment account of $100,000. on the Assets side and strike out the associated Replacement Reserve (or Depreciation Reserve) of the same amount on the Liabilities side, which would leave us with $140,000 Cash on the Assets side of the balance sheet and on the Liabilities side we would have left $100,000. in the Capital Stock account and $40,000. in the Earned Surplus account. In other words, as of Dec. 31, 1952 we are theoretically out of business. But "hallalula", we have that $140,000. in cash. Yes, through replacement charges (depreciation) we recovered our original $100,000 invested, and we added to it the $40,000 of earnings left in the business. But now it is time to completely rebuild the plant represented by the original $100,000 investment. Can we replace the retired plant with the funds on hand? Obviously not! Not even with the $40,000 of earnings left in the business. Why? Simple—Inflation! We put good 100 cent dollars in originally and we recovered approximately 30c dollars with which to make the replacement. It therefore seems reasonable to assume it will cost about $300,000 to replace the $100,000 of plant built 20 years ago.

Trouble is, this situation did not just happen all at once as I've attempted to picture it here. It has been happening piecemeal for the past many years. We, especially in the small companies, simply haven't realized the full implications because the problem tends to be covered up in the overall operations.—Which reminds me of a plaque I recently saw displayed over the office door of a local implement dealer. It went something like this,—"Trouble iss, vee gets too quivk oldt, and too late schmart". Perhaps I didn't do the "dutch" justice, but it seems to fit in so well here.

What now? To rebuild and serve

QUOTES

"Somewhere there must be a limit fixed to both taxes and to foreign aid expenditures. We cannot indefinitely continue raising Federal taxes and giving away money at a constantly increasing rate. For the sake of everyone in this nation, Congress must select limitations and pass laws that will prevent reckless administrations from exceeding those limitations."— *(Scottsville (Ky.) News).*

* * *

"Long ago, America rejected the cartel system of Europe, and set about vigilantly to stop the growth of business monoply wherever it threatened. It is apparent that the monoply power of labor unions is no less a danger to our national security." — *(Anaheim (Calif.) Bulletin).*

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FOR QUALITY, SERVICE, ECONOMY, PROMPT DELIVERY

Assurance of long life and trouble-free conductivity. For all makes and types of telephone instruments.

Write for catalog and samples

COMMERCIAL CORD & SUPPLY CO. INC.
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Phone CLIFTON SPRINGS 189

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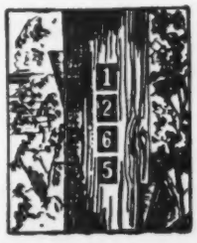
Even Before Today's High Labor Cost
STAMPED AND EMBOSSED
Metal Pole Markers, Letters and Figures
Cost Less Than Stenciling



One of today's most expensive maintenance items is the marking of telephone poles for identification. This cost can be materially reduced by installing Premax Stamped and Embossed Aluminum markings — letters, figures and numerals or special tags. They actually cost less and never require renewing for they outlast the pole.

Send for sample and prices.

PREMAX PRODUCTS
DIVISION CHISHOLM-RYDER CO., INC.
5245 Highland Ave. Niagara Falls, N. Y.

the same original 1,000 patrons you will have to borrow about $160,000. of additional capital. Or perhaps you will choose to sell more stock. In fact you will probably be forced to sell more stock for at least part of the additional capital. And, if you have another rich uncle leave you another legacy, you may buy the stock yourself. One thing certain, even had you left all of your earnings in the business, you couldn't possibly do the job without additional "outside" capital. In any event you will be entering into one form or another of a partnership, whereas in the past you were sole owner. That may be good and it may be bad, but it surely isn't what you anticipated 20 years ago, is it? So now your original and justifiable expectations are surely blasted to kingdomcome. Yes sir, old man inflation fixed you good!

Well, we are going to fulfill our obligations to our patrons and rebuild, regardless of the outcome. We work fast and furious and accomplish the feat over night. Here then is our last Balance Sheet which discloses our financial condition as we embark upon a new 20 year plan.

JAN. 1, 1953
After complete Replacement of Plant To Serve Original 1,000 Telephones

ASSETS	
Plant Investment	$300,000
Cash	None
Total Assets	$300,000
LIABILITIES	
Capital Stock, Original	$100,000
New Capital Stock, or Funded Debt	160,000
Earned Surplus	40,000
Total Liabilities	$300,000

So you see we are back in business again, and "broke" again because we spent all the money we had, plus all the money we could get, to rebuild the plant.

In this discusison I have attempted to follow, hypothetically, the proper accounting methods as I understand them to be prescribed in Indiana. I have followed a fictitious exchange from the cradle to the grave and through a resurrection, allowing for what I consider to be sound operating practices and providing for a reasonable earning under the private enterprise system. And yet my investor has ended up by losing about 2/3 of his original plant through the 20 years of operation.

The only just solution I can see to this problem is a revised and realistic form of thinking which will permit us not to simply recover our original dollars invested, but instead, to recover through adequate depreciation charges, sufficient dollars to replace the original plant as it becomes obsolete or worn out. Failure to make this possible is, in my opinion, a form of confiscation of propetry, whether brought about innocently or intentionally planned. My hope and prayer is for a revised accounting practice geared to survival under an inflationary economy. . . . "Vee iss already too quivk oldt, let's not again bee too late schmart!"—THE END.

New Equipment Placed In Service at Girard, Pa.

THE PENNSYLVANIA Telephone Corp. has added Girard, Pa., to the growing list of telephone exchanges now providing completely automatic service.

The cutover to Federal Step-by-Step automatic switching equipment was completed recently when 750 lines and 1600 terminals were placed in unattended, automatic dial service at the modern Girard exchange, a satellite of Erie, Pa. The equipment, including a one-position local and toll test board, was manufactured by Federal Telephone & Radio Corp., Clifton, N. J., an associate of International Telephone & Telegraph Corp.

Marking a further step in the company's modernization and expansion program, the new installation provides free service to another Federal Step-by-Step exchange at Fairview, and toll trunks to Erie as well as to other Independent telephone companies at Albion and West Springfield.

Present at the cutover were Lewis F. Shepherd, president of the Pennsylvania Telephone Corp.; Albert A. Dunbar, Erie business office supervisor; Theodore J. Schuler, general plant superintendent, Pennsylvania Telephone Corp.; Frank D. Reese, acting chief engineer; Frank D. MacCarthy, general commercial superintendent; Donald S. Parsons, Erie district plant superintendent, Pennsylvania Telephone Corp., and E. J. Hart, Federal Telephone & Radio Corp.

Cullom & Ghertner Co. Announces New Forms

CULLOM & GHERTNER CO., Nashville, Tenn., business forms printing and lithographing specialists, have

(*Please turn to page* 77)

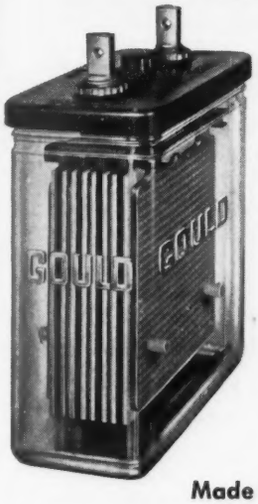
Construction
With the Double
and America's
the new cane *seat is cooler - cleaner - more comfortable...*

sturgis SC-240
Literally "by request"—this new operator's chair retains all the posture advantages for which Sturgis is famed and adds the cool, clean comfort of a *cane* seat. The posture-curved, well-cushioned back rest is covered in genuine leather.
The exclusive Sturgis "Follow-Flex" feature automatically adjusts to the operator's every movement, supports her restfully all the time, discourages fatigue, keeps her at top efficiency.
Other new and welcome features include a plastic-coated steel foot ring which retains its color and a handy purse holder, available on request. Six seat heights, all adjustable.
STROMBERG Telephone CARLSON

on Materials and Supplies . . .

Guarantee of Stromberg-Carlson Leading Manufacturers . . .

the battery that lasts practically forever



gould planté

For long life and uniform dependable service, no other telephone battery equals the Gould Planté. It has rolled up amazing performance records, remaining in active full-float service for 20 years, 30 years and longer!

In the Planté, *all* of each positive plate is pure lead, containing *no* antimonial impurities. Thus, Gould has eliminated the primary cause of self-discharge, capacity losses and shortened battery life. Planté batteries float at constant voltage and maintain rated capacity all their life. Because they almost never need service, maintenance is negligible. If you would cut battery costs to a minimum, choose Planté.

Made by GOULD-NATIONAL BATTERIES, INC.

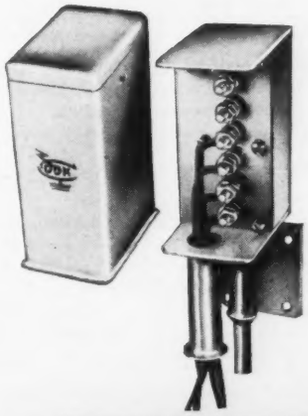
for shorter drops . . . less bracket lines

cook 3-pair XB terminal

An addition to the well-known XB family of unprotected terminals, this development provides far better, more economical means of subscriber distribution out of rural cable.

The 3-pair XB Terminal was especially designed to reduce to a minimum all factors that would cause high resistance and the possibility of line leakage and maintenance. Hence the heavy, close-fitting welded zinc cover; the noncorrosive Monel faceplate on which are mounted the highly insulated cable studs; the use of the flanged tube as an entrance for drop wires. This tube can be completely sealed after the drop wires are installed.

The new Cook Terminal measures 7½" high, 3¾" deep and 2½" wide. It is furnished with or without cable stub, to user's specification.



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ROCHESTER 3, NEW YORK

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in long-lasting poles
is yours when you use

DIAMOND C POLES

Now better than ever, as made in Colfax Lumber & Creosoting Co.'s NEW plant

All Diamond C poles are carefully selected from trees growing in the heart of the famous Southern Yellow Pine belt. Each pole is graded according to physical properties desired and pressure-treated with 8 lbs. (more, if you want it!) of grade No. 1 creosote oil, per cubic foot of wood. A new and modern treating plant promises better-than-ever quality and faster deliveries.

Have the lowest possible annual pole cost. Specify . . .

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Installation Specialists

CENTRAL OFFICES
of all sizes
Installed - Modified - Removed
All Makes

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Valuations and Original Cost
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Designing—Appraisals of Telephone Systems
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A complete engineering service
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Backed by Years of Bell Experience
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Quality Workmanship at Low Cost
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TELEPHONE CONSTRUCTION
Complete outside Plant Construction and Tree Trimming
Let us work with you on your Construction Problem—large or small. Assistance and free estimate on any job.
Harrison Construction Company
Hampton, Iowa

Advertise
in
TELEPHONE ENGINEER
for best results

(Continued from page 74)

announced the addition of "Snap-i-Sets" to its nationally distributed lines. "Snap-i-Sets" is the registered trade mark of snapout style one-time carbon interleaved forms.

According to the supplier, "Snap-i-Sets" are top quality Rotary lithography produced with great speed and economy by skilled craftsmen operating the best equipment in use anywhere.

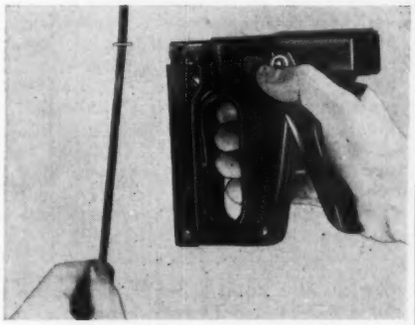
Cullom & Ghertner Co. is climaxing its 46 years of business forms manufacture by offering this modern service to its customers in every line of business throughout the country as a time-saving, cost-saving method of handling multiple copy paper work. The company claims "Snap-i-Sets" will further strengthen the company's reputation for quality, service and price.

Cullom & Ghertner Co. business forms' engineers will help to adapt "Snap-i-Sets" to a particular problem. The company has been offering this type of service for 46 years and has developed forms of all types for every kind of business.

Samples, layout sheets and pricing sheets are available on request. Write Cullom & Ghertner Co. in Nashville, Atlanta or Chicago.

New Parallel Inside Telephone Wire

A NEW FLAT parallel conductor inside telephone wire which can be installed at high speed by means of a gun tacker is now available. According to the manufacturer, the Whitney Blake Co., the wire is small,



New Whitney Blake parallel inside wire.

neat and inconspicuous when installed. Coming in two and three conductor styles with #22 gage soft copper conductors, the wire has one tinned conductor for instant polarity identification.

A polyvinyl chloride compound forms the high dielectric strength insulation over the conductors which lie side by side and are joined by a web designed to rip easily, providing

(Please turn to page 80)

"Cousin Tim's ground line was a disgrace!"

(Cissie Cleanpole's stories of the grim days B.P.)*

"Cousin Tim should be a lesson to us all! Straight and tall and handsome he was, with the jauntiest crossarms on the line. But my dear, his ground line!

"No one noticed for a long time how he was rotting away down there. But it grew worse and worse, until even his friends were talking. Before the end, he had wasted away at the ground line until he was no bigger than a fence post! My mother used to cry when she told of him. It was before the days of PENTA, of course . . ."

**B.P.—Before PENTA*

PENTA gives clean, positive protection

Cousin Tim's ground line—and his whole length, above and below the ground—would have remained staunch and true if he had been treated with PENTA Preservative.

PENTAchlorophenol, the *clean* chemical formula so easy on the men who climb the poles, guards danger areas like a hawk. And PENTA is not only constant and uniform in its properties—it's powerful!

Poles treated with deep-penetrating PENTA are protected scientifically from the hazards of shell rot, top rot, ground line decay and insect damage. Yet PENTA's *clean* protection for your poles costs no more than other types of wood preservation. For names of companies supplying PENTA-protected poles and crossarms, write:

CHAPMAN CHEMICAL COMPANY

Dermon Building, Memphis 3, Tenn.

CHAPMAN

Penta Preservative

Conforming to A.W.P.A. Specifications P8-49 and P9-49

Buyers' Directory

ACETYLENE EQUIPMENT—"Prest-O-Lite" No. 1 Lineman's outfit helps you do a better job, quicker and easier. The Linde Air Products Co., 30 E. 42nd St., New York 17, N. Y. —[ADV. 1]

ADVERTISING, Directories—General Telephone Directory Co., 604 Pine Ave., Long Beach, Calif., and 185 N. Wabash, Chicago, Ill.—[ADV. 2]

ANCHORS, Plastic Expanding, Universal. All Purpose—Mount in any Material, Holub Industries, Inc., 424 DeKalb Ave., Sycamore, Ill.—[ADV. 3]

ANCHORS & WIRE CONNECTORS—Matthews Scrulix Anchors, Matthews Telephone Wire Connectors. Write for bulletins. W. N. Matthews Corp., St. Louis 16, Mo.—[ADV. 4]

AUGER—The "Alaska Frost Auger." Free trial on your own machines. Henning Electric Motor Co., P. O. Box 786, Fargo, N. D.—[ADV. 5]

BATTERIES, Dry Cell—The Ray-O-Vac Company, 2317 Winnebago St., Madison, Wisc.—[ADV. 6]

BATTERY—WATER UNITS Demineralizers for Tap Water—A. E. Tomkin & Co., 1828 Columbia Rd., N.W., Washington 9, D. C.—[ADV. 7]

IF YOU DO not see a listing in these columns of products or services you are interested in write "Buyers' Directory", 7720 Sheridan Road, Chicago 26, Illinois, for such information. It will be furnished quickly and without charge.

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.—[ADV. 8]

BELTS — CLIMBERS — PLIERS — SAFETY STRAPS—CONSTRUCTION TOOLS. Klein & Sons, Mathias. 3200 Belmont Ave., Chicago 18, Ill.—[ADV. 9]

BOOTHS—Acoustic Telephone—Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.—[ADV. 10]

BOOTHS—Churchill Cabinet Co., 2119 Churchill St., Chicago 47, Ill.—[ADV. 11]

CABLE, All Plastic, Aerial, Duct, Direct Burial, PBX, Switchboard.—The Ansonia Electrical Co., Ansonia, Conn.—[ADV. 12]

CABLE SPINNING—The Cable Spinning Equipment Company, 432 Crane St., Topeka, Kans.—[ADV. 13]

CARRIER EQUIPMENT—Adler Telephone & Telegraph Carrier Equipment has been standard for twenty years in the Independent Field. Mfd. only by Southern Electric & Transmission Co., 3127 Holmes St., Dallas, Texas.—[ADV. 14]

CONNECTORS, CABLE—Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.—[ADV. 15]

CORDS, Instrument and Operators—Commercial Cord & Supply Co., 26 Main St., Clifton Springs, N. Y.—[ADV. 16]

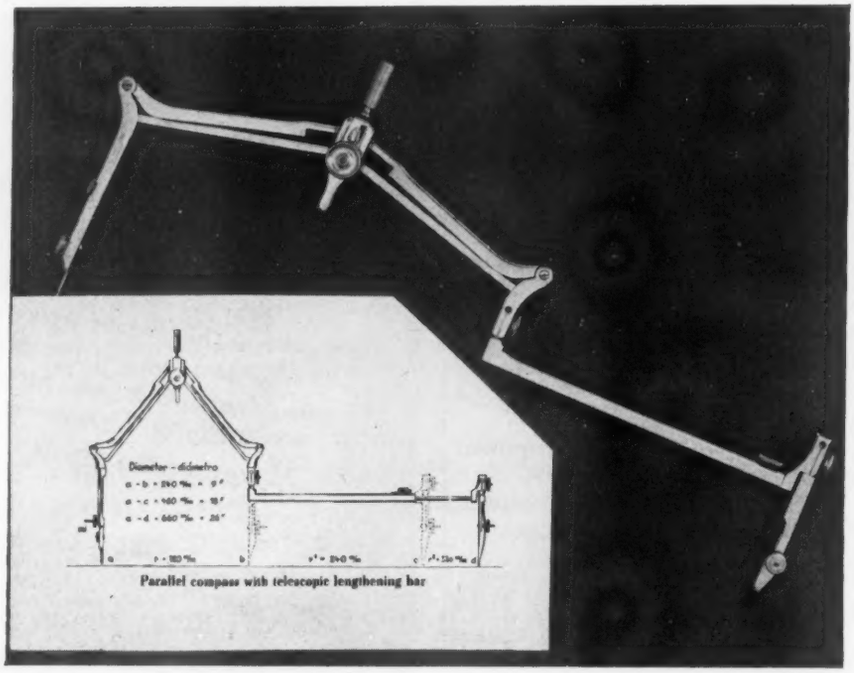
CORDS, Switchboard & Telephone—Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.—[ADV. 17]

CROSS ARMS—American Cross-Arm, Inc., 141 W. Jackson Boulevard, Chicago, Ill.—[ADV. 18]

"EARTH BORING MACHINES" Sterling Model "A"—Precision Engineered and Hydraulic Controlled. Sterling Engineering & Mfg. Co., 173 Gilligan St., Wilkes-Barre, Pa. —[ADV. 20]

ELECTRIC HOT WATER HEATERS. Thermostatically controlled for any hot water heater, Vulcan Electric Co., Danvers 17, Mass.—[ADV. 21]

The New Products' Showcase



Parallel compass with telescopic lengthening bar

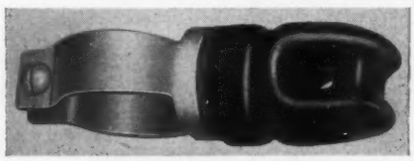
NEW DRAWING INSTRUMENT

This new "Original Lotter" Parallel Compass combines all the advantages of a straight compass—a giant bow and a beam compass (capable of drawing circles up to 26 inches) all in one instrument.

The manufacturer claims construction of this new drawing instrument insures automatically, parallel opening of the lower legs of the compass to whatever degree the compass legs are opened, without being forced to curve the knees of the compass. Pen and pencil parts, therefore, always stand in best position to drawing paper, i.e. 90 degrees, working with or without self-contained lengthening bars.

Due to the symmetrical shanks and the balance of weights, and in combination with the micromatical adjustment, this new parallel compass is claimed to be the most modern drawing instrument in the world.

It also has the famous "Geared Head" construction that assures years of trouble free use. A screw on the head of the compass firmly locks the instrument in any position, so that circles of the same diameter can be drawn over and over again without any deviation. For further information check New Product 432.

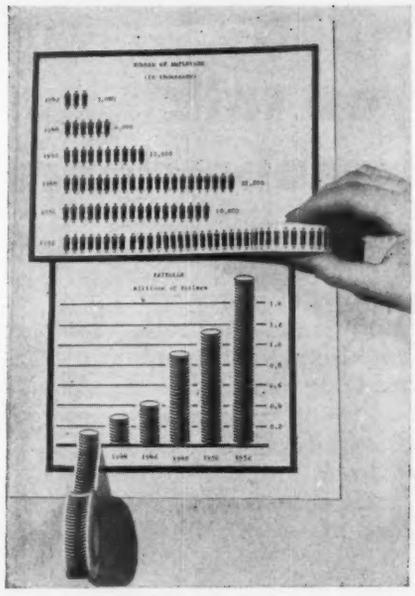


WIREHOLDER

A new line of Pipe Mounting Service Wireholders and House Brackets has been introduced by Porcelain Products, Inc., Findlay, Ohio. Designed primarily as a supporting means for service entrance conductors on low, ranch-type houses which call for a pipe mast to secure proper ground clearance they have also been adapted widely for other uses. The single point unit with all porcelain wireholder is illustrated herewith. Two point brackets are available in 9 inch and 12 inch spacing and three point brackets are available in 4½ and 6 inch spacing. The entire series is also available with metal, reinforced wireholders. Single point units can be used on 1¼", 1½", 2" and 2½" pipe. The 2 and 3 point units can be used on 2" and 2½" pipe. Patents applied for.—For complete information check New Product 433.

"PICTO-TAPES"

Pictographs on pressure-sensitive tapes have now been incorporated into the simplified method of graphic chart construction developed by Chart-Pak, Inc., Stamford, Conn. These "Picto-Tapes" enable anyone to make profes-



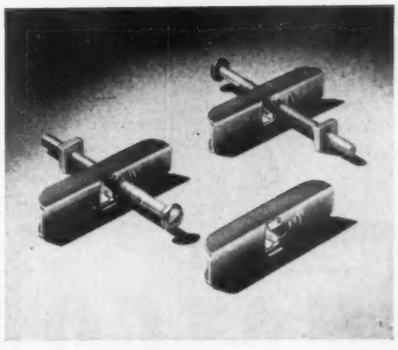
sional looking graphic charts which put life into dry statistics.

Designed by the Pictograph Corporation, the initial patterns include figures of men, women, children, stacks of coins and stacks of bills. Many other symbols will be available.

Each symbol is repeat-printed on rolls of self-adhering tapes, 5/8" wide and 300" long.

The PictoTapes are easy to use for chart construction since they adhere readily to many materials, such as paper, cloth or plastics. They were especially designed to supplement the standard statistical patterns which CHART-PAK now supplies. Picture charts can now be "drawn" simply by applying the PictoTapes from the roll to the CHART-PAK charting board.

Additional information can be obtained by checking New Product 434.



THREE-IN-ONE TOGGLE BOLT ASSEMBLY

A new type toggle bolt is now available which offers three distinct advantages not previously obtainable. Super-Grip 3-in-1 Toggle bolts may be installed with either (1) the head of the bolt outside the wall or (2) with the nut outside the wall and (3) the toggles may be purchased separately and used with any bolt. These features make possible reduced inventories because the toggle bolt is reversible in the head and provides flexibility not heretofore possible. The toggle head is available from stock for bolt diameters from 1/8" up to 1/2".

For catalog and additional information check New Product 435.

Buyers' Directory

ENGINEERING, Construction—Neale Construction Company, 432 Crane St., Topeka, Kans.—**[ADV. 22]**

FURNACES—For quickly and economically melting lead and paraffin—Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.—**[ADV. 23]**

INSPECTION SERVICE—For poles, crossarms, and preservative treatments. Inspectors stationed throughout U.S.A. A. W. Williams Inspection Co., Mobile, Ala.—**[ADV. 24]**

INSULATORS, Porcelain—Porcelain Products Inc., Box 300, Findlay, Ohio.—**[ADV. 25]**

LIGHTWEIGHT PULLERS—Coffing Hoist Company, 800 Walters St., Danville 5, Ill.—**[ADV. 26]**

PIPE PUSHERS—Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.—**[ADV. 27]**

PIPE PUSHERS—Greenlee Tool Co., 2136 12 St., Rockford, Ill.—**[ADV. 28]**

POLE HOLE DIGGERS—For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 16, Minn.—**[ADV. 29]**

POLES—Cedar poles and Fir cross arms. R. G. Haley & Co., Inc., Spitzer Bldg., Toledo 4, Ohio.—**[ADV. 30]**

POLES, Southern Yellow Pine—Colfax Lumber & Creosoting Co., Inc., P.O. Box 23, Pineville, La.—**[ADV. 31]**

POLES, Creosoted Southern Yellow Pine and Douglas Fir. The Long-Bell Lumber Company. Wood Preserving Div., R. A. Long Bldg., Kansas City, Mo.—**[ADV. 32]**

POLES, Southern Yellow Pine—Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.—**[ADV. 33]**

POLES, Southern Yellow Pine—Texas Creosoting Co., Orange, Texas.—**[ADV. 34]**

POLES—Texas Best pressure-creosoted poles. Lone Star Creosoting Co., P. O. Box 9, Longview, Texas.—**[ADV. 35]**

POLES—Western Red Cedar, Western Larch, Lodgepole Pine. B. J. Carney & Co., Minneapolis 3, Minn. and Spokane 8, Wash.—**[ADV. 36]**

POLES & CROSSARMS—Creosoted poles and crossarms. Conroe Creosoting Co., Conroe, Texas.—**[ADV. 37]**

PROTECTIVE EQUIPMENT—Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.—**[ADV. 38]**

PRINTING—Telephone forms, Cullom & Ghertner Co., 600 21st Ave., Nashville 4, Tenn.—**[ADV. 39]**

REBUILT TELEPHONE & SWITCHBOARDS—Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 2, Ill.—**[ADV. 40]**

SUPPLIES—New all metal heavy duty extension loud ringers; ready wire reels, payout only and payout and takeup in one.—Suttle Equipment Co., Lawrenceville, Ill.—**[ADV. 41]**

SWITCHBOARDS, TELEPHONES, ETC.—Automatic Electric Co., 1033 W. Van Buren St., Chicago, Ill.—**[ADV. 42]**

TELERING—Telephone ringing by frequency conversion. Voltage range for all purposes, central office and private branch exchanges. Telkor, Box 186, Elyria, Ohio.—**[ADV. 43]**

TRUCK BODIES—Highway Trailer Co., Edgerton, Wisc.—**[ADV. 44]**

TRUCK BODIES AND EQUIPMENT—McCabe Powers Auto Body Co., 5900 N. Broadway, St. Louis 15, Mo.—**[ADV. 45]**

WIRE DROP & INSIDE—Jackets of neoprene, rubber or plastic. Lowell Insulated Wire Co., Lowell, Mass.—**[ADV. 46]**

WIRE, Insulated—DATED DROP WIRE—Neoprene or Weatherproof—Alphaduct Wire & Cable Co., Milltown, N. J.—**[ADV. 47]**

WIRE, Insulated Drop and Bronze or Copperweld—Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.—**[ADV. 48]**

WIRE, Insulated Drop, Genuine Ironite—Paragon Electric Co., Two Rivers, Wis.—**[ADV. 49]**

WIRE, Insulated Drop, HT Bronze, Paraprene or Braid Insulation—Paragon Electric Co., Two Rivers, Wisc.—**[ADV. 50]**

WANT INFORMATION??
IF YOU DO not see a listing in these columns of products or services you are interested in write "Buyers' Directory", 7720 Sheridan Road, Chicago 26, Illinois, for such information. It will be furnished quickly and without charge.

SEND IN THIS COUPON FOR MORE INFORMATION

Telephone Engineer Publishing Corp.
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Please forward complete information on the following products and services dsecribed in the July, 1952 issue of TELEPHONE ENGINEER AND MANAGEMENT. (Check informtaion desired.)

NEW PRODUCTS

NP 432..... NP 433..... NP 434..... NP 435.....

SERVICES AND SUPPLIES

ADV. 1.....	ADV. 2.....	ADV. 3.....	ADV. 4.....	ADV. 5.....	ADV. 6.....	
ADV. 7.....	ADV. 8.....	ADV. 9.....	ADV. 10.....	ADV. 11.....	ADV. 12.....	
ADV. 13.....	ADV. 14.....	ADV. 15.....	ADV. 16.....	ADV. 17.....	ADV. 18.....	
ADV. 19.....	ADV. 20.....	ADV. 21.....	ADV. 22.....	ADV. 23.....	ADV. 24.....	
ADV. 25.....	ADV. 26.....	ADV. 27.....	ADV. 28.....	ADV. 29.....	ADV. 30.....	
ADV. 31.....	ADV. 32.....	ADV. 33.....	ADV. 34.....	ADV. 35.....	ADV. 36.....	
ADV. 37.....	ADV. 38.....	ADV. 39.....	ADV. 40.....	ADV. 41.....	ADV. 42.....	
ADV. 43.....	ADV. 44.....	ADV. 45.....	ADV. 46.....	ADV. 47.....	ADV. 48.....	
		ADV. 49.....	ADV. 50.....			

Name ..... Title.....

Company .....

Street Address .....

Town..... Zone..... State.....

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(Continued from page 77)

separate insulated conductors. Complete safety is assured since the conductors are always fully insulated right up to the termination. The wire is available with either ivory or brown insulation to blend with decorating schemes.

The gun tacker used for installing this wire is specially modified so that the staple forms around the insulation without deforming it. The wire is guided along beams, panels or baseboards with one hand while the other operates the gun tacker. For further information write Whitney Blake Co., Dept. F, New Haven 14, Conn.

Copperweld Opens New Pacific Northwest Office

TO PROVIDE better service to the Pacific Northwest trade, Paul Van Wagner, vice president in charge of sales of Copperweld Steel Company's Wire & Cable Division, announces the appointment of L. E. McGuire as Pacific Northwest district manager with headquarters in the Vance Building, Seattle 1, Washington. Mr. McGuire will be responsible for Copperweld's sales operations in the States of Washington, Oregon, Idaho, Utah and the western section of Montana, up to but not including Billings.

L. E. McGuire

Prior to this appointment, Mr. McGuire was Copperweld's district manager at Memphis, Tennessee. Before that, he served as sales manager in Tennessee, Mississippi, Alabama, and Arkansas. He comes to his new position with a background of over 20 years experience in the power, communications and railroad industries.

Harry J. Billica, who formerly handled the entire Pacific Coast ter-

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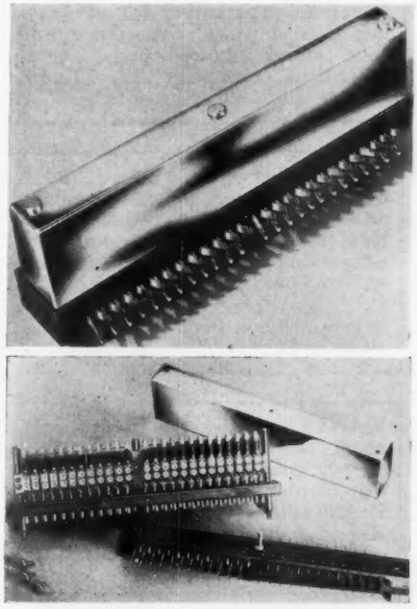
ritory for Copperweld will continue as district manager at San Francisco. In addition to covering California, Mr. Billica will be in charge of Copperweld's sales operations in Nevada and Arizona.

New Self-Restoring Protector & Terminal Block Patented

THE COOK ELECTRIC CO., Chicago, Ill., has been granted U. S. Letter Patent No. 2,595,658, on a new self-restoring Central Office Protector. According to the Cook Electric Co. the protector embodies "basically new



Cook Electric Co. announces new self-restoring protector and terminal block.

and improved principles designed especially to reduce maintenance expense, and the time circuits are out of use due to electrical disturbances."

Spokesmen for the Cook Company state that the protector is constructed on opposite sides of a metal mounting plate in somewhat the usual manner, but the terminals are so arranged that they plug-in directly on the main frame terminal block. The circuits through the protector from outside line to switchboard are entirely free from mechanical contacts. This provides a continuous electrical path.

According to the manufacturer features embodied in this protector are:

(1) *Lightning Protection*:—Lightning protection from the line terminal to ground is provided through Tungsten contacts. This gap is further protected with a fixed secondary gap which is set for any desired break down voltage.

(2) *Power Circuit Protection*:—An arc from a power cross would appear across the Tungsten contacts,

(*Please turn to page* 84)

ALPHADUCT DROP WIRE carton packaging

Once you start using Alphaduct Drop Wire you will find out that the handy carton packaging has real dollars and cents advantages.

Not only does your wire arrive in perfect condition, but the sturdy carton protects it all the while it's in your warehouse.

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We try to make Alphaduct the finest, longest lasting drop wire money can buy. Quality materials are used throughout, step-testing during every phase of manufacture assures uniform high standards. Alphaduct drop wire is dated with a color coded thread so you can tell for sure how long it lasts.

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MANAGER-ENGINEER WANTED—Santa Fe Telephone Company, an REA Cooperative, with 2,000 prospects for telephone service in 5 Florida Counties. Must have administrative ability to obtain efficient operations and direct large expansion program. Must have ability to hire, train, and direct personnel in all phases of telephone work. Permanent position with opportunity for advancement to qualified person. Technical, plant, commercial knowledge and office management experience absolute requirement. Salary commensurate with qualifications. Replies confidential. Furnish complete details of education, experience, and objectives in first reply. Write Santa Fe Telephone Company, P. O. Box 198, Melrose, Florida. Attn: Mr. W. E. Bigham, President.

Neale Construction Co., Inc. Journeyman Telephone Lineman and Line Foremen all needed to travel middle west constructing telephone lines and plants. Permanent, steady positions. Good salary. Contact J. L. Berling, Neale Construction Company, 432 W. Crane St., Topeka, Kansas.

COMBINATIONMAN, permanent position, good wages, numerous employee benefits. Employment also affords opportunity for advancement. Replies are strictly confidential and should include details of experience and objectives. Write Union Telephone Company, Owosso, Michigan.

HELP WANTED—MANUAL Central Office Equipment Installers and Dial or Manual Central Office Repairmen wanted. Supervisory and non-supervisory positions open. Attractive salary, working conditions, pension plan and other benefits. Excellent opportunity for advancement. State age, experience and send small photograph. General Telephone Company of Illinois, Illinois Building, Springfield.

WANTED—Manager, REA financed rural telephone company of 250 subscribers—ultimate 350. Now being completely rebuilt for conversion to dial. Prefer man and wife to operate manual switchboard until conversion complete. Living quarters furnished. Write to Ivan Kleven, Sec., Appleton, Minnesota.

WANTED—Salesman to cover Missouri and Kansas for telephone supply house on commission basis. Car furnished. Box 8783, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago, Ill.

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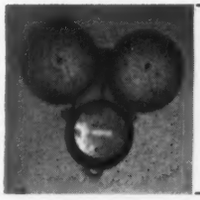
Business Opportunities

BUSINESS OPPORTUNITY for aggressive individual willing to make investment and assume complete charge of setting up sales force for young and growing telephone supply company. Furnish education, experience and personal information in reply to box 8782, Telephone Engineer Publishing Corp.



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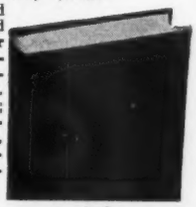

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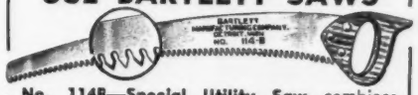

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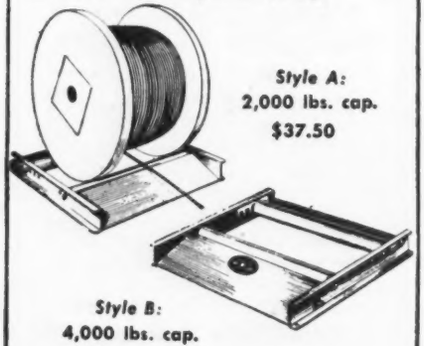

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By Reinhold Rudenberg
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This is an enlarged edition of a classic in the field. Designed as a survey of the entire field of transients in lumped power circuits, it discusses their physics rather than their mathematics. Material on electric machinery, apparatus and instruments, transmission and distribution and transients proper, is arranged so that it progresses from the more simple to the more difficult applications. Many numerical examples, taken from actual practice, are included, with numerous oscillograms and measurements further bridging the gap between the theory and the practice of the transients.

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(Continued from page 81)

and the heat developed from the arc would promptly move the contacts together, this directly grounding the power current. As soon as this power flow ceases, the protector would return to its normal operating position without manual attention.

(3) *Sneak Current Protection*:—Sneak current protection is provided by a low resistance coil wound on a flexible member. This low resistance coil has the same electrical characteristics as a conventional telephone heat coil, so under an abnormal flow of current, the flexible member warps over, bringing the two Tunsten contacts together thereby directly grounding the line. This ground is maintained as long as the abnormal current flows, but when it ceases, the flexible member returns to its normal position removing the ground from the line.

(4) *Temperature Compensation*:—The flexible members, which function due to abnormal temperatures, are made of bi-metal and, therefore, their position is dependent on their temperature. In order to cancel the effect of the varying ambient temperature, two bi-metallic members are employed in such a manner that they compensate for any change in ambient temperature but remain responsive to temperatures generated by excessive currents or arcs.

(5) *Sealed Unit*:—All of the operating parts of the protector are provided with a heavy metal cover, this cover may also be made of transparent material to facilitate routine inspection.

(6) *Hermetically Sealed*:—The tight fitting cover allows the unit to be hermetically sealed after which it is filled with an inert gas to remove all deleterious corrosive effects of active gases such as oxygen. This sealing effectively eliminates all difficulties from fungus atmospheric moisture and dirt.

(7) *Alarm Circuit*:—No alarm circuit is provided because the unit is self-restoring and, therefore, does not require manual attention.

(8) *Plug-In Features*:—The plug-in feature allows the replacement of the entire protector bank without unsoldering any line or switchboard wires in case of a major burnout or other trouble. According to the Cook Electric Co. service can be restored almost instantly by merely unplugging the unit in trouble and plugging in the replacement unit.

(9) *Unattended Exchanges*:—Cook Electric Co. representatives state this protector is ideal for unattended exchanges because of its self-

restoring features, thus eliminating many long maintenance trips which would otherwise be encountered. Also, where unattended exchanges are mounted in poorly ventilated enclosures, the hermetic sealing of the unit prevents any damage arising from excessive humidity or other abnormal environmental conditions.

(10) *Space And Weight Saving*:—According to the manufacturer the protector and terminal is extremely compact due to combining the protector part and the terminal strip in plug-in relationship to each other. The terminal block and protector measure is 9½ x 2½ x 3½" and weighs only 2 pounds 3 ounces.

(11) *Molded Bakelite*:—The terminal blocks and protector base are molded from high impact bakelite; this assures adequate strength and complete rigidity of these parts.

(12) *Military Service*:—Due to the ruggedness, compactness and hermetic sealing of this protector, it is claimed the unit is ideal for military service, mobile equipment, or in any place where environmental conditions create more than normal hazards.

Any inquiries regarding the new development should be directed to the Cook Electric Company, Chicago 14, Illinois.

Marmon-Herrington Co. Celebrates 21st Birthday

1952 MARKS the 21st anniversary year of Marmon-Herrington Co., Inc., Indianapolis, Ind., manufacturer of heavy-duty all-wheel-drive trucks, all-wheel-drive Fords, trolley coaches, and motor coaches.

Founded in 1931 by the late Walter C. Marmon, of automobile fame, and Arthur W. Herrington, noted automotive engineer, the company has grown from a small custom builder of large multiple-drive vehicles to become not only the world's largest commercial producer of all-wheel-drive trucks, but one of America's foremost manufacturers of transit vehicles.

In celebration of its 21st anniversary, Marmon-Herrington has announced a completely new line of heavy-duty all-wheel-drive trucks, known as the "600" series. There are five standard models in the line, with gasoline or diesel engines optional. Horsepower ranges from 139 to 180; gross vehicle weight from 24,000 pounds to 33,000 pounds. The "600" Series is characterized by modern styling, with massive hood and grill, and one of the roomiest, most comfortable cabs on the market.

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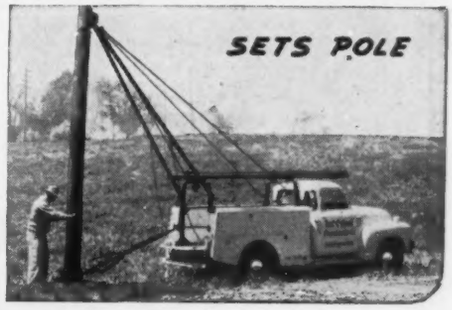

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W. C. Hopper Joins Kellogg Swbd. & Supply Co.

F. M. PARSONS, sales manager, Kellogg Switchboard & Supply Co., Chicago, has announced the appointment of W. C. Hopper as REA switchboard sales supervisor and assistant manager of the switchboard sales department.

Mr. Hopper began his career with the Bell System gaining 15 years experience in sales and commercial activities before joining the Western Electric Co. Throughout World War II his work was principally connected with Signal Corps problems.

W. C. Hopper

From 1945 to 1950 Mr. Hopper was active as sales engineer in dial conversions for North Electric Manufacturing Co.

Prior to joining Kellogg, Mr. Hopper was in the Application and Loan Division of REA in charge of telephone loan activities for the southeastern states.

Mr. Hopper will assist A. O. Perry, switchboard sales manager.

New Folder Describes Bi-Seal Insulating Tape

THE BISHOP Manufacturing Corp. has announced publication of a four-page, two-color folder entitled "Insulating Wire and Cable Splices with Bi-Seal Self-Bonding Insulating Tape."

This new piece of literature covers the characteristics, properties and applications of Bi-Seal—the only plastic self-bonding tape available for wire and cable splicing today.

Copies of bulletin B-100 may be obtained from Bishop Manufacturing Corp., 14 Canfield Road, Cedar Grove, N. Y.

STROMBERG / CARLSON

transmitter

Published by the makers of famous XY Equipment

VOL. 1, NO. 4, JULY 1952

Extending Subscriber Loop Ranges Helps Operating Companies Conserve Copper

ORGANIZATIONS undoubtedly have given consideration to extending subscriber loop ranges due to the need for conserving copper in the extension of outside plant facilities. In step-by-step offices, the limit of 1000 ohms conductor loop has been considered standard and outside plant has been built to conform with these limitations. Stromberg-Carlson, aware of the problems of the operating companies in trying to conserve on the use of copper in outside plant facilities through the use of smaller gauge cable, is endeavoring to evaluate the problem as it affects equipment and outside plant costs. We wish to quote from a letter from our Engineering Department to an operating company:

Defining the problem

"It is our belief that the immediate objective is to provide dialing, ringing, and supervisory ranges equal to the transmission range now available with the Western Electric Company 500 series instruments. This is generally interpreted to mean that outside plant facilities can be extended to 1300 ohm conductor loops. Means for obtaining operation over these extended conductor loop ranges with step-by-step equipment and, in particular, with Stromberg Carlson XY equipment, is herein discussed.

"Stromberg-Carlson dial equipment operates over 1000 ohm conductor loops and allows for 200 ohms in the instrument in evaluating ringing and supervisory loop conditions. Exchange voltage may vary and five low impedance ringers may be as low as 15,000 ohms between conductors or from each side of the line and ground; and five low impedance ringers may be bridged across the line or to each side of the line and ground.

What is "average"?

"The above mentioned operating limits can readily be met by Stromberg-Carlson equipment without requiring special adjustments for relays and switches. An average station distribution to be found on actual lines has not been assumed for these operating limits, but rather a much worse condition wherein all stations are 'bunched' on the line. It has been our aim to have the industry, as a whole, agree on what 'average station distribution' shall be for exchange equipment so as to permit manufacturers of step-by-step equipment to more readily provide some extension in the range of operation of their equipment.

"If we assume a party line with five low impedance ringers spaced at equal intervals along the line, Stromberg-Carlson equipment will dial over conductor loops of greater than 1300 ohms; this is also true for single party lines. Such dialing ranges can be accomplished with exchange voltages of 44 to 54 volts. Assuming the same line condition, Stromberg-Carlson equipment can satisfactorily ring (without premature tripping) but cannot trip over a conductor loop in excess of 1000 ohms plus 200 ohms in the instrument or a total of 1200 ohms. The same applies to the back ridge transmission relay; that is, the relay supplying transmission battery to the called subscriber. This assumes a low voltage limit of 44 volts. Thus our dial equipment is limited in possible extension of conductor loop resistance range by the performance of the ring trip and back bridge relays; the pulsing range already permits operation over expected increase in conductor loop resistance limits when assuming operation with well distributed ringer loads.

Range can be extended

"The conductor loop range of the ring trip and back bridge relays can be extended in two ways. One is by raising the low voltage limit permissible in an exchange and the other is by a change in the design of the ring trip and back bridge relays. When dealing with equipment now in operation, it appears that the best solution is by limiting the low voltage of an exchange to approximately 48 volts. This will permit these relays, by slight readjustment, to operate over 1300 ohm conductor loops. The other method is by reducing the spring load of these relays through the addition of 'slave' relays so that the increased conductor loop resistance can be met with voltages as low as 44 volts; this would perhaps be the most economical method for the smaller exchanges to be installed in the future. It

(*please turn page*)

STROMBERG-CARLSON transmitter

is quite possible that high impedance ringers will be required to insure satisfactory ringing conditions over these extended loop ranges.

Percent-make of dial

"Where the make of dial equipment cannot readily meet the longer conductor loop for dialing, some improvement can be had by holding the percent-make and speed of subscriber dials to closer limits. It is our belief that this should be avoided if possible since it may mean increased maintenance cost and might, if preventive routine tests are not regularly conducted, cause many wrong numbers. The Stromberg-Carlson dial always has been adjusted to the close percent-make and speed requirements now advocated by some to permit better dialing conditions. Even though our dial is adjusted to permit better dialing conditions, it seems unreasonable to utilize these closer tolerances when abnormal abuse of dials by some subscribers may cause the best-made dial to change its initial adjustment.

Maintaining voltage

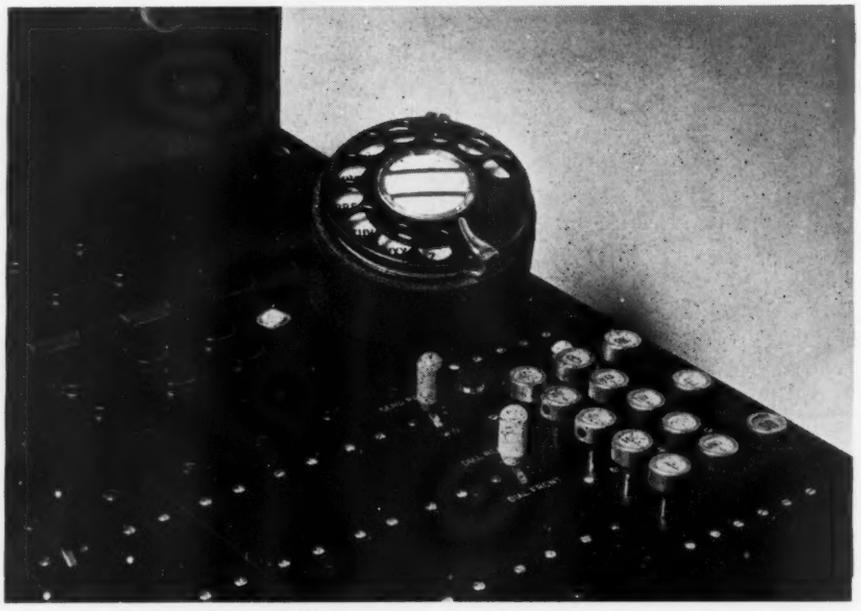
"In summarizing the foregoing, it is our opinion that Stromberg-Carlson dial equipment can have its conductor loop range extended to meet the transmission range now available through the use of new telephone instruments by (a) limiting the low voltage of the exchange to 48 volts in which case only slight readjustment of the equipment is necessary or (b) by a change in the ring trip and back ridge relays through the possible addition of 'slave' relays to permit operation with exchange voltages as low as 44 volts. This presents a problem in existing exchanges as to whether it is more economical to provide auxiliary power to insure that the exchange voltage will not go lower than 48 volts during commercial power failure or to change the ring trip and back bridge relays in all connectors so that no change will be required in the present power facilities. Undoubtedly, the size of the exchange will have much to do in determining which plan is more economical. Then too, consideration must be given to new exchanges yet to be installed and there is a good possibility, by the redesign of the back ridge and ring trip relays, an economical arrangement can be provided which will not require the more expensive power plant."

Available on request

Stromberg-Carlson's engineering facilities are available to all operating companies interested in the possibilities of extending subscriber loop ranges. Those operating companies now using XY equipment, as well as those contemplating the installation of XY exchanges, are assured that their exchange equipment can be made to operate over extended loop ranges should there be such a requirement now or in the future. The new Stromberg-Carlson "1400" series telephone has been designed to be a counterpart in the extension of subcriber loop ranges so that present transmission standards may be maintained and dialing and ringing ranges extended with a minimum of change in existing exchange equipment.

New Keysender, Designed For Intertoll, Features Speed, Low Maintenance Costs

by Charles Fisher, Engineering Department



Design of the Stromberg-Carlson Keysender took place concurrently with the development of the new and improved Stromberg-Carlson #3 Toll Board so that the two go together. Both were designed primarily to be integral parts of the nationwide intertoll dialing network.

In the design of a keysender, to be especially suited for nationwide intertoll dialing, the following features were considered as necessary:

1. As many as 13 or 14 digits would have to be sent. (If possible, allowance should be made for more digits.)

2. Upon reception of the first stop dial signal (off-hook supervision) the sender should stop sending immediately, and prepare to start sending immediately upon the reception of a start dial signal.

3. Upon the reception of a second stop dial signal, the sender should immediately stop sending, release itself from the cord it was sending on, release all remaining stored digits, and quickly prepare itself to be available for another call.

4. There should be provisions to either automatically start ringing at the end of sending, with operator control to cancel automatic ring (inward positions), or to have automatic ring only when the operator sets it up with her keyset (CLR positions).

5. There should be provisions to allow the operator, in case of an error, to erase all digits both stored and sent; i.e., drop the switch train and return to normal ready to send again on the same cord.

6. A method to show the operator that the keysender is functioning properly.

7. The sender should release from the cord, release all stored digits, and return to normal no matter what the operator does wrong (such as pulling down cord while the sender is sending on it, or registering digits without the cord up, etc.).

8. There should be some convenient and flexible method of connecting a sender to a position so that a position with a faulty sender can easily be assigned another available sender.

9. In the event that no spare sender is available, or until a spare sender can be connected, allow the use of the toll position by means of a dial at the position.

10. There should be some easy method of routine check of senders, both for pulse output and over-all operation.

The Stromberg-Carlson sender incorporates all of these design objectives, plus

many other modern refinements. In addition, the advantages of individual senders over common senders outweighed the common senders so much that it could almost be considered one of the features just mentioned.

Individual senders advantageous

Individual senders are ready instantly for service on the associated position; no time is wasted waiting for a free sender during busy hours. All an operator has to do to send with an individual keysender is to press the digit key for the registration of the first digit. In a split second the sender has associated itself with the cord upon which her talk key is open, set up the trunk in the dial condition and started pulsing. Another advantage of individual keysenders is that the number of control wires between the position and the keysender is not so limited, so that no marginal or polarized control of registration is needed, as is the usual case in common senders. Thus, registration is more direct and positive. In fact, tests show that the Stromberg-Carlson sender can follow registrations at a rate of 20 registrations per second. The fastest human hand is about 12 registrations per second. (This is for repetitive operation of the same key on a speed test, and is many times faster than actual keying of the number.) So there is a very large and satisfactory factor of safety which should eliminate the false registrations that may occur in common senders where the operator could register at a greater speed than the sender can follow.

Less routining

Individual senders need not be constantly routined. Since the sender is tied to a position, the operator on that position knows exactly how that sender is functioning and will report any troubles that occur. When common senders develop trouble, the operators tend to kick off a bad one and call for another rather than be bothered holding it to report the trouble. Thus, a malfunctioning sender may go unreported for some length of time, or if reported and not held, may take considerable time to hunt down.

Novel reflexing scheme

In order to allow the required 13 or 14 digits to be sent and still get the maximum economy of register circuits, and also to avoid having some registers which are never used on the usual 10 digit intertoll call, a reflexing scheme is used on the registers. This is not, however, the usual reflexing scheme in which each call must begin with the first register. Instead, an endless chain principle is used which causes the registers to continue to rotate around and around with usage, thus giving even service, and also allowing an infinite number of digits to be sent. Extensive tests have shown that 8 registers are sufficient to allow an operator to key up a 13 digit number without running out of registers (i.e., there are already 5 digits sent by the time she keys the last digit). Using the endless chain principle means that no matter how many digits may be required in the future, the sender will still not be obsolete.

Operational safeguards

The operator, in addition to her digit registration and control keys, has three lamps closely associated with her keyset which show her that it is functioning properly and so that she may, in turn, operate it properly. One of these is the white start-stop supervisory pilot, which is in effect a multiple lamp from the cord supervisory lamp of the cord on which the sender is sending. The second lamp is the green sending lamp which comes on when the sender is seized, and follows pulses to indicate that the sender is pulsing. The third and most important lamp is the multifunction red non-key lamp. When this lamp comes on, it indicates to the operator that she should not key any more digits until it goes out again. This lamp comes on:

1. if a fuse is blown in the sender;
2. when the operator has completed keying and operates her completion key, at which time it stays on until the sender is finished sending and is off the cord and ready to send on another cord;
3. when the error key is depressed and stays on until the sender is completely reset to receive digits;
4. when the sender is kicked off after the second stop dial, until the sender is completely back to normal;
5. if the registers become all filled, it comes on at the instant the key is depressed which fills the last register and remains lighted until the register is again available;
6. this lamp can also be lit by operation of the busy key on the sender circuit plate, or if a major circuit plate on the keysender is removed.

Multiple use

Each Stromberg-Carlson sender is associated with its toll position by use of a patch cord employing the same plug and multiconductor flexible cable used on the XY Switch. These cords allow the senders to be assigned to other positions if necessary. A very convenient method is furnished as standard equipment on the sender shelves —a jack that mates with these patch cords is multipled throughout the sender shelves. Thus, if it is desired to put a sender other than the "normal" sender on a toll position, all that need be done is to remove the "normal" patch cord and patch from the position jack to the multiple jack. Then, wherever the available sender is located, it is patched from the sender jack to the multiple jack, and the toll position is connected in this way to the available sender via the multiple. There is provision on each shelf for three of these multiples, allowing three such simultaneous connections in a larger office.

Testing is easy

The use of this patch cord has one other great advantage; it permits easy connection of a test set to the sender, which will test all functions of the sender. The test set can reproduce any action of a toll operator such as inserting or removing her head set, opening or closing the talk key on the cord associated with the sender, inserting or removing the cord associated with the sender, and provides a means for giving start-stop supervision, as well as the standard key set arrangement. The box contains a counting device, to count pulses and indicate the number of pulses sent on each digit by means of numbered lamps, as well as other lamps to indicate potentials present on other control leads that are carried between the sender and the toll positions. Thus maintenance personnel can routine the sender completely right at the sender, watching the relays directly, so as to interpret properly what action is taking place.

Two unique savings

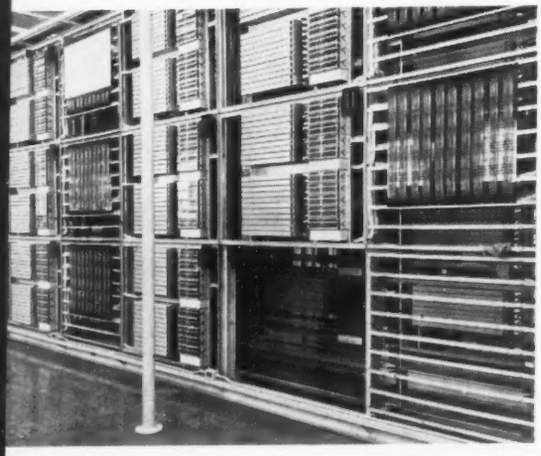
In order to facilitate further maintenance, each register circuit has an associated monitor supervisory lamp. This lamp is dark when the register is vacant, is on dim when the register is seized awaiting registration, and is on bright when the register contains a stored digit. Thus, the maintenance man can readily determine what is going on in the registers and can quickly run down a malfunctioning register circuit.

Considerable space saving was obtained in this sender by judicious use of the fast-acting, efficient, small-type Stromberg-Carlson "C" relay. The end result is a compact, straight forward keysender designed especially for intertoll dialing which will be almost maintenance-free, with provisions for simple but thorough routining, and versatility for whatever may come in the future.

A portion of the Tampa toll room.

STROMBERG-CARLSON *transmitter*

Hobbs and Carlsbad, New Mexico Now Served by 5600 Lines XY!



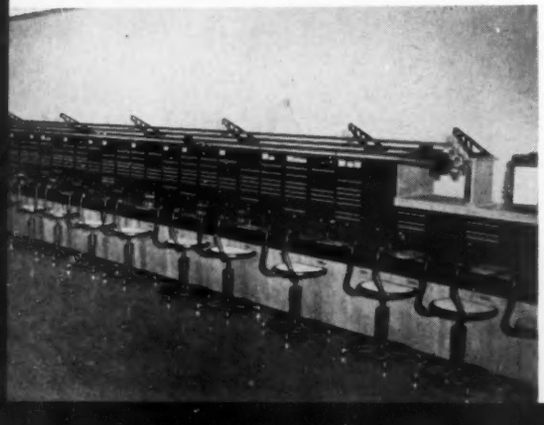
Selector frames in Carlsbad XY System

WHEN Stromberg-Carlson undertook the job of supplying 5600 lines of XY dial equipment and 26 positions of toll board in the Hobbs-Carlsbad section of New Mexico, everyone concerned realized that this was a man-sized task. In addition, XY-PBX service was supplied in neighboring industrial establishments as part of the general program of modernization in this area.

Partly because of the size of the conversion, and partly because of the rigorous time schedule, which had to be met, it was gratifying indeed to receive this letter from the customer—the Southwestern Associated Telephone Company.

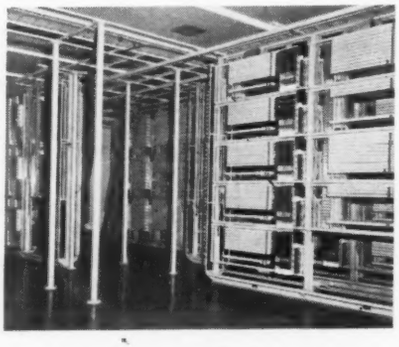
"The tremendous undertaking of converting two major exchanges of 2800 lines each to XY dial operation within 30 days was completed without a hitch on December 1, 1951, when the Carlsbad telephone system became dial-operated. On the previous November 3, Hobbs was cut over to dial.

Toll board and information desks at Hobbs, N. M.



"Training operators, assigning new telephone numbers, testing and installing new equipment, arranging necessary publicity, issuing directories, were only fragments which when put together helped to complete the over-all job. Liaison work and cooperation between all departments and the representatives of Stromberg-Carlson was necessary to the finest degree. It is a real tribute to the many individuals who took part so that the conversions were completed so successfully.

"Not to be overlooked or forgotten were the problems of building construction. At Hobbs a completely new building was constructed, while at Carlsbad a major addition was made to the present office. Later, the Carlsbad commerical office will be redone to conform with the other new interiors.



Part of XY System at Hobbs, N. M.

"The interest of the local people at both Hobbs and Carlsbad in the dial conversion proceedings gave ample evidence of the vital part which the telephone system plays in every community. Local businessmen and civic leaders in both cities gave up an evening to be with us and witness the cutover procedure. The satisfaction of seeing a good job gave them confidence in future telephone development.

"Hobbs and Carlsbad are but major steps forward in our ever-growing Company. They are signs of progress of which all of us can be proud."

Stromberg-Carlson also salutes the many people who carried out this conversion so successfully.

MEET *Howard Strassner*

More often than not, companies seem to reach outside the local community when filling their more responsible management positions. Not so in the case of Howard G. Strassner, Production Manager of the Telephone Division at Stromberg-Carlson. Howard is a native Rochesterian, a product of the local schools and Mechanic's Institute (now the Rochester Institute of Technology). His first full-time job was at Stromberg-Carlson.

In the 31 years Howard has been with the company, he has put a great deal of himself into his work. As he came up through the ranks to his present position, he acquired an inside knowledge of production processes and scheduling problems. Management spotted in the youthful shipping clerk a young man who could take greater responsibilities and these came in good time. After a turn in the machine division, Howard was given charge of all wire stock where he demonstrated his grasp of detail. As a result, he became assistant chief of the Order Department, handling all replacement parts, and in 1941 was made head of the Order Department.

The war years—1942-46—were rugged; a tremendous increase in demand, extremely tight schedules, and critical shortage of certain materials. As Production Control Manager for all divisions of the company after 1944, Howard proved his mettle. Under the present divisional operation, Howard is responsible for Tool Design, Production Engineering, Material Control, Production Control, Manufacturing, Stocking and Shipping of all telephone apparatus and equipment.

When he has a minute to spare, he loves to tell of his days in semi-pro baseball in the Western New York League. Or perhaps of the "rough and tumble" exchanges he runs into as a member of the steering committee of the Rochester Industrial Management Council. His major interests, which measure the man, meet the eye immediately upon entering his office: the membership certificate in the Telephone Pioneers of America and the photographs of his family at home.

STROMBERG-CARLSON transmitter

FACTORY TRIP

Manufacture of "A" Type Relays

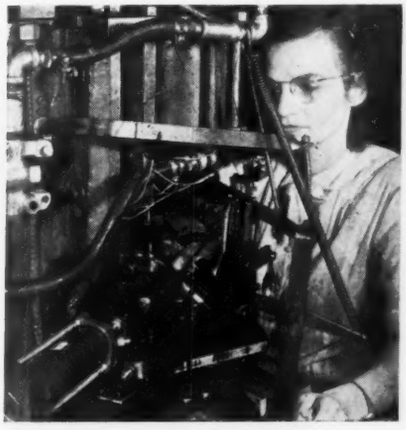
Stromberg-Carlson has been a pioneer in the development of telephone relays. Over 40 years ago the 200 Type Relay was developed for the telephone systems then in use. Its design has been irrefutably justified by years of continuous service under all sorts of conditions.

About five years ago, with the widespread conversion to dial operation, the "A" Type Relay, with its many unique features which fit the requirements of modern switching systems, was developed to the place where manufacturing could begin.

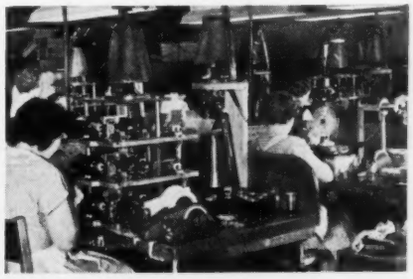
These "A" Type Relays differ from the 200 Type in that the spring stocks can be built much higher (as necesitated by the dial system), and operate on relatively lower current. The secret of this is largely due to three features:

1. The "hydrogen" method of annealing the armature
2. The "knife-edged" pivot
3. Twin contacts

The annealing process assures the maximum magnetic quality; the pivot reduces friction and guarantees motion in an accurate direction; and the twin contacts, when compared to single contacts, cut failures in the ratio of approximately 1:20 at 30 grams pressure.



1. Preforming springs to insure correct contact pressure.



2. Banks of semi-automatic coil-winding machines.

In order to maintain accuracy of spring adjustment, insulators are ground to a tolerance of plus or minus three-tenths of one thousandth, and then baked to exclude moisture. In a departure from the usual trade method of preforming springs to a fixed form, "A" Type Relay springs are preformed to a dimension which insures a predetermined contact pressure in toolmade dies (Illustration No. 1). Springs are assembled in a normal position, and the spring stocks tightened under a pressure of 1200 pounds. (This latter step is added assurance that spring combination will remain tight for life.)

3. Over-all current flow test is part of rigid inspection.

From the purchase and preparation of raw material to the final inspection stamp, care and ingenuity are used in the manufacture of these relays. The coils are wound on cores insulated by electrical grade cellulose acetate, and the ends of the windings are also protected from the spoolheads by the same material. The coils are wound on banks of lathe-precision winders, (as shown in Illustration No. 2) assuring accurate coils at an economical price. The Armco iron cores, annealed armature, rigid frames, and the nickel silver springs with crossbar palladium bimetal contacts assure long, satisfactory operation. The final individual spring adjustment and the over-all current flow test (Illustration No. 3) are the last steps in a process marked by care and precision, to produce a relay for the industry on which it can rely with confidence.

PERSONALS

Captures Golf Trophy . . . S. Fred Nixon, Jr., of the Chautauqua and Erie Telephone Corp., Westfield, N. Y., canned a 20-foot putt on the 35th green, which set him up to win the seventh annual Campbell Cup invitation golf tournament at Hot Springs, Virginia.

Ike's Boyhood Pal, who is often mentioned in biographies of the political hopeful, is Ralph F. Lucier, President of the United Telephone Company, Warsaw, Indiana. On May 3, a Saturday Evening Post article named the three Lucier boys as chums of the young Eisenhower, known to him as "Big, Little and Middlesized Frenchy." Ralph was the latter.

New General Manager of the Lufkin, Conroe, and Diboll, Texas, exchanges is Marion Clay, formerly Sales Engineer for the Kansas City Division of the Stromberg-Carlson Company.

A 1½-pound Largemouth Bass, caught by P. J. "Gus" Lasley, was the day's biggest catch, when the Arkansas Telephone Association Directors, their luncheon and meeting out of the way, settled down to the serious business of fishing the waters of Norfolk Lake.

The meeting, held at Mt. Home, Ark., on April 18, was attended by: Mr. and Mrs. Ted Adair, Star City; Mrs. Virginia Hirsch and Bill Harned, Mt. Home; Mr. and Mrs. Saunders, Flippin; Carl Moore, Harrison; John Carter and P. J. Lasley, Little Rock; Gus Lane, Russellville; John and Jack Holt, Stilwell, Okla.; George Hearne, Warrensburg, Mo.; Mr. and Mrs. R. J. Thomas, Cotter, Ark.; Jerry Flanders, Jefferson City, Mo.; Eldon Williams, Oregon. Mo.

200,000 TELEPHONES

The Rochester (N.Y.) Telephone Corporation, a 73-year-old independent which has grown with its community, installed its 200,000th telephone on April 9 of this year. The event was marked by the affixing of an engraved metal plate on the subscriber's telephone. Commercial Superintendent C. C. "Sam" Hathaway of the Telephone Company, officiated at the informal ceremony.

STROMBERG-CARLSON transmitter

KANSAS CITY BRANCH SERVES THIRD OF NATION

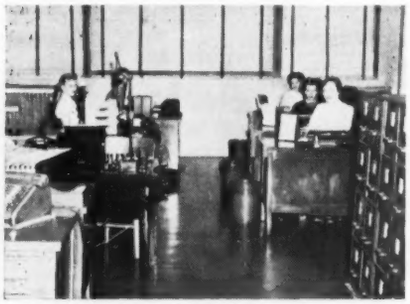
By A. B. Preble, Manager

Personnel of the Kansas City Branch.

At right is A. B. Preble, Manager. Others, reading from left: William Riley, Sales Engineer; Flora Shout, Cashier; Roegner Cushing, Credit Manager; Geraldine Davis, Stock Clerk; Wilma Smith, Stenographer; Ellen Quinlan, Order Editor; Walter Baum, Shipping Foreman; Bernice Bivens, Stenographer; Grover Burchett, Shipping Clerk; Francis Cannady, Shipping Clerk; Phyllis Lewis, Stenographer; Jacqueline Cocagne, Biller; Theodore Wieland, Supply Sales; Frank Micka, Salesman; Mr. Preble. Not present: Julia Osborne, File Clerk.

Long in years and wide in territory served, with its operation keyed to the surging pulse of the great Southwest—this is the Kansas City branch office of Stromberg-Carlson.

The story begins in 1915. Mr. A. J. Roberts, formerly of Garford Manufacturing Company in Ohio, was the first Kansas City branch manager, with a small office and warehouse at 1311 Main Street. These were rough and tumble days, with a very healthy growth in demand for telephone



Part of Kansas City office.

service, and strong competition among the manufacturers. The Stromberg-Carlson branch thrived in this atmosphere; increasing business soon required new and larger quarters, and in 1932 it was again necessary to find the extra space provided by the present building at 2017 Grand Avenue.

The Territory covered is just under a million square miles—roughly one-third of the territorial United States. Traveling this vast area leaves little time for home gardening, as the Kansas City representatives shuttle among the hundreds of Stromberg-Carlson installations which dot the area and try to assist exchanges in their modernization plans.

Mr. A. B. "Art" Preble became manager of the Kansas City office in 1945, after many years with the company as a Sales Engineer in Kansas City. He is now assisted by two Sales Engineers, Myles Wooley and William Riley, who serve the entire territory in direct sales and assistance to travelers. Matters of Credit are handled by Roegner Cushing; Theodore Wieland is in charge of Supply Sales. A completely stocked warehouse is maintained, as well as clerical and billing departments.

The ten-state area is divided among five sales representatives. Carl Price travels in East Texas and Louisiana; E. Gwynn Browell has West Texas and New Mexico. Frank Micka covers Arkansas, Oklahoma, and Southern Kansas; Robert Leary makes his calls in Northern Kansas, Nebraska, Colorado and Wyoming. Clarence Kastner serves the state of Missouri.

Sixty-seven Stromberg-Carlson XY installations have been installed or placed on order in the five-year period since the

Carl H. Price

E. Gwynn Browell

XY System was introduced. Notable for their size are Carlsbad and Hobbs, New Mexico; Lufkin, Stephenville, and Navasota, Texas; Junction City, Kansas; and Blair, Nebraska. The largest operating XY in the United States today is at Jef-

C. O. Kastner

R. H. Leary

ferson City, Missouri, with initial equipment for 5,500 lines and 8,000 terminals.

One unique customer service is provided by this Stromberg-Carlson office; the only complete up-to-the-minute library of all factory drawings and specifications for every installation in this territory main-

Frank Micka

Myles Wooley

tained in a Kansas City branch by any manufacturer.

As this great heartland assumes more importance in the life of the country, the Kansas City branch will continue to provide modern telephone service which plays such an integral part in this progress.

Complete stocks are kept in this Kansas City warehouse.

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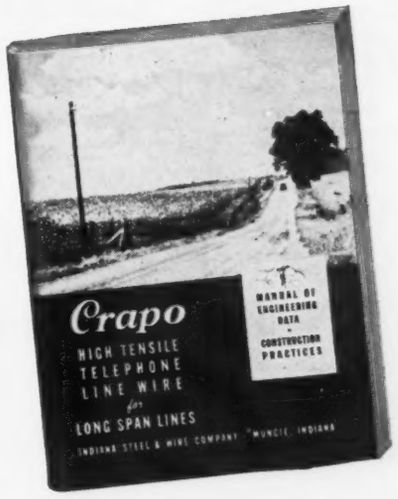
How to Build Better Lines at Lower Cost . . .



Write for This New Manual

- Engineering Data for Long-span, Low-cost Lines
- Tables of Stringing Sags
- Construction Practices
- Methods of Measuring Sags
- Pole Guying
- Metalicizing, Transposition
- River Crossings

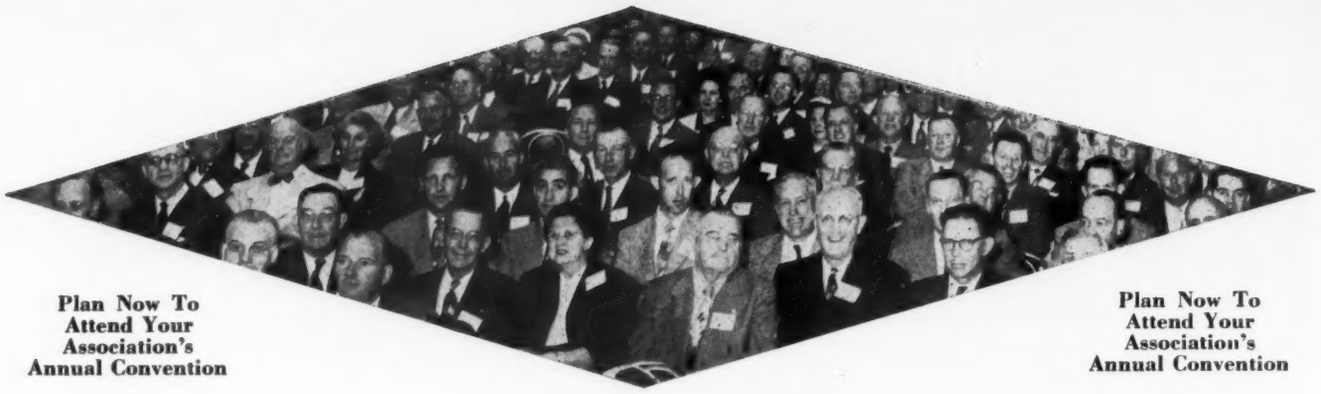
Pertinent information on these and other subjects of timely interest to telephone men are contained in this new illustrated book.

It tells how to build better, more dependable rural lines; how to reduce construction and maintenance costs by employing *Crapo* High-Tensile Line Wire (*Crapo* HTL-135 or *Crapo* HTL-85) in long spans.

If you do not have a copy of this instructive Manual, be sure to ask for one! Direct your inquiry to your distributor of *Crapo* Galvanized Wire and Strand or write us!

Indiana Steel & Wire Company
Muncie Indiana

Crapo HIGH-TENSILE TELEPHONE LINE WIRE



Plan Now To Attend Your Association's Annual Convention

Plan Now To Attend Your Association's Annual Convention

THE BACK OF THE BOOK

By JOHN G. REYNOLDS, Managing Editor

You Can See It Now . . .

EVEN THOUGH 25 years have passed since Bell Laboratories staged the first public demonstration of TV, the televising of the national political conventions marked the first time that millions of people were able to see the devious and often noisome way our presidential candidates are chosen.

There are now 17 million TV sets in this nation of ours and during the convention days most of them were running on an hour-in-and-out schedule.

Maybe the opportunity to see a phase of our politics in action will be a helpful thing; maybe it will heighten interest to the point where millions more people will go to the polls this November and vote. If it helps that way, television will certainly earn itself a great big medal!

• • •

That takes time . . .

TOLL DIALING gets a call there QUICK. Almost too quick, say some LD operators who are in their earlier stages of familiarity with key pulsing. For instance, there was the face tinting experience of an Omaha operator who took a long distance call from a Kenwood customer. She had to switch from a recording to straight forward trunk. The called customer was on the line before the operator was quite ready. But she fixed that by saying excitedly, "*Just a minute, please, I have to change my trunks.*"

• • •

Canine IQ . . .

DOGS, if you care to accept the evidence of the Southwestern Bell Co., aren't so smart after all. After the company had made some necessary number changes at Fulton, Mo., a customer made an earnest plea for the return of his old number. Reassurance that calls would be channeled to his new number failed to cheer him. His problem centered around his telephone-wise dog. Trained to know that three rings should be answered, the dog would bound into the yard to alert his master or even wake him from a snooze to answer the telephone. With a different ring the dog was muddled and the master was losing sleep.

Sympathizers in Commercial and plant worked out a means of restoring the old ring while keeping the new number. Order was restored. "The new number won't bother us at all," beamed the customer, "at least not until the dog learns to read!"

• • •

For Every Mood, A Dial Noise . . .

THINGS are getting mighty complex and it isn't all Stalin's fault. We are thinking right now of the rigors that sound effects men go through to assure that the ratcheting noise of dialing a telephone sounds like it should when you hear it over TV or radio.

How a telephone is dialed, say radio dramatists, can help create a mood of suspense or haste or—well, you pick a mood. To assure that the dialing will lend just the right impression, sound effects experts have recorded many dialing "moods". The record gets played, often with amplification, when there is need for dial noise. As we said at the beginning nothing is very simple any more. Not even clicks.

• • •

More On Moscow's Directory

THE NEW telephone book provides a bird's-eye view of Moscow's facilities previously not easily obtained. Among the interesting bits of information is the fact that Moscow has 325 banks and 120 district militia stations.

Some 1,600 schools and educational institutions are listed, including 668 10-year schools, similar to the first eight years of American grade schools and two years of high school; 173 institutes and 10 acadamies.

Moscow has 130 drugstores and four drugstores selling only homeopathic remedies. It has 98 hospitals and 413 nurseries.

The Answer Is YES!

WESTERN UNION

1201

DL=Day Letter
NL=Night Letter
LT=Int'l Letter Telegram
VLT=Int'l Victory Ltr.

W. P. MARSH... SIDENT

...ceipt is ... OCT 195...

...e time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin.

CTA136

.LRA178 NL PD=LORAIN OHIO 16=

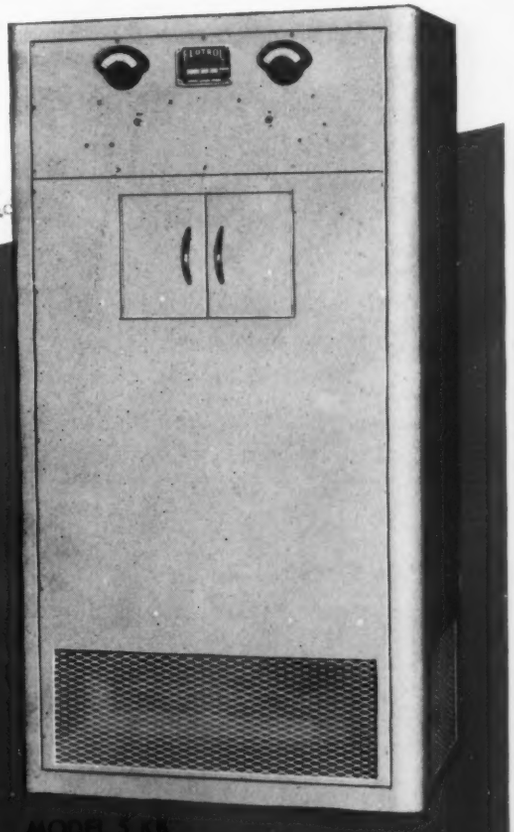
CENTERVILLE TELEPHONE CO=

CENTERVILLE NDAK=

YES, A THREE-PHASE FLOTROL WILL OPERATE IN PARALLEL WITH A MOTOR-GENERATOR SET. FURTHERMORE, IT WILL REGULATE THE CURRENT AND VOLTAGE OUTPUT OF THE GENERATOR. ORDER FLOTROL EQUIPPED WITH RESISTOR FOR PARALLELING WITH GENERATOR=

LORAIN PRODUCTS CORP
1122 F ST. LORAIN OHIO=

THE COMPANY WILL APPRECIATE SUGGESTIONS FRO...



MODEL 5 KB
100 Amps. 50 Volts

Now tried and proven, the combination of a FLOTROL with a motor-generator type battery charger may be the answer to your problem, too. By adding the proper three-phase FLOTROL to your exchange, you can maintain full-floating operation 24 hours daily, cut down the running time on your rotary equipment, provide adequate stand-by capacity, and realize sizeable savings on your monthly power bills. The equalizing feature installed in the FLOTROL will regulate the output voltage of your DC generator to the precise standard set by the FLOTROL and will divide the load current between the FLOTROL and the generator in proportion to their ratings.

For complete information write for Bulletin 161 listing three-phase FLOTROLS from 25 amp. to 200 amp. Single-phase FLOTROLS ranging from 1 amp to 24 amp. are listed in Bulletin 160.

FLOTROL
PARTNERS IN DEPENDABILITY
SUB-CYCLE

LORAIN PRODUCTS CORPORATION 1122 F ST., LORAIN, OHIO

"Sure, we rely upon STANDARDS OF MEASUREMENT"

ALMOST ALL of the products we sell and the services we provide in our business have standards of measurement. The oil we sell is judged by its gravity, the gasoline we pump is evaluated according to its distillation range, sulphur content and octane rating. Even the amount of air we put in a customer's tires is checked against an accepted standard of measurement.

In nearly every field of endeavor, there are accepted standards of measurement by which relative worth or performance is judged. There are, however, a few outstanding exceptions to this rule. For example, we find that very few Independent Telephone Companies have ever checked the worth of their directories by applying a proven standard of measurement.

LET US ASK YOU JUST ONE QUESTION.

Did you measure the results of your current directory by simply comparing it with your previous issue? Unfortunately, most telephone companies are still following such a procedure.

The records we have compiled from publishing telephone directories which serve more than 4,000 Independent Telephone Exchanges have enabled us to establish positive standards by which we can measure the success of a telephone directory publishing job. Among the standards we have developed are: normal directory revenue per station; normal directory revenue per business account; normal directory revenue per advertiser; and, average number of advertisers per one hundred business accounts.

These established standards, when applied to your current directory, will show you whether or not it was as successful as it might be. And, it will be quite apparent whether or not we can increase your net profit from your directory.

Let us prove the validity of our claim. Send us a copy of your current directory and let us make a study of it without any cost or obligation whatsoever.

Mail us a copy today — you have everything to gain and nothing to lose!

TELEPHONE DIRECTORY COMPANY

Publishers of Telephone Directories throughout the United States and the Territory of Alaska.

N. 108 Washington
Spokane, Washington
Telephone MAdison 8644

1415 Avenue M
Lubbock, Texas
Telephone 2-6330

185 North Wabash Avenue
Chicago, Illinois
Telephone STate 2-5478

604 Pine Avenue
Long Beach, California
Telephone 6-7221

To have a representative call, simply telephone collect or write to the nearest office listed above.